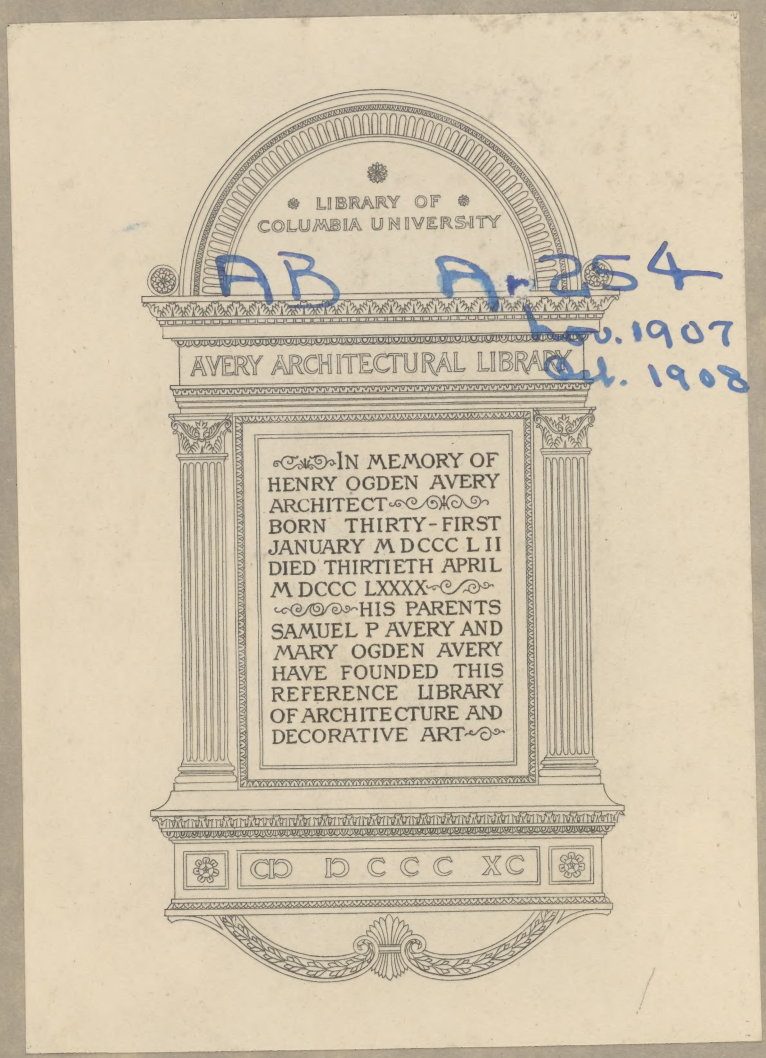

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THE

Journal

OF

The Society of Architects

FOUNDED 1884; INCORPORATED 1893.

INCLUDING

Transactions and Architectural Notes.

VOL. I. (New Series). Nov., 1907—Oct., 1908.

London:

AT THE OFFICES OF THE SOCIETY OF ARCHITECTS,
STAPLE INN BUILDINGS (SOUTH), HOLBORN, W.C.

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Nov. 1907 - Oct. 1908

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**The Journal of
The Society of Architects.**

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FOUNDED 1884. INCORPORATED 1893.

Including Transactions and Architectural Notes.

No. 1. Vol. I.] NOVEMBER, 1907. [New Series.

The Society is not, as a body, responsible for the opinions expressed by individual authors and speakers.

A New Masonic Lodge.

Consecration Ceremony.

V.W. Bro. Sir Edward Letchworth, Grand Secretary, assisted by five Grand Officers, consecrated "The Society of Architects Lodge" at the Liverpool Street Hotel, London, E.C., on Wednesday, October 16th. The beautiful and impressive ceremony was performed in a manner which fully sustained the Grand Secretary's reputation for perfect work. There were eighty-five Brethren present, and the ceremonies were listened to with rapt attention. The new Lodge has for its Founders twenty-five members of the Society which bears its name.

At the ceremony of Consecration the following Grand Officers assisted Bro. Sir Edward Letchworth: W. Bros. Henry L. Florence, P.G. Supt. of Works, as Senior Warden; A. Burnett Brown, Grand Supt. of Works, as Junior Warden; The Very Rev. The Dean of Bocking, P.G. Chaplain, as Chaplain; Frank Richardson, P. Dep. G. Reg., Grand D. of C., as D. of C.; Thomas A. Bullock, P.G. Swd. Bearer, as Inner Guard. The ceremony was greatly enhanced by an Oration on "The Nature and Principles of the Institution" by the Chaplain, the Very Rev. the Dean of Bocking, P.G.C., who dwelt upon the close connection between architecture and Freemasonry, and urged the Brethren to build up their new Lodge on a solid foundation.

At the conclusion of the ceremony Bro. Albert E. Pridmore was duly installed into the Chair, and immediately invested his officers as follows: Bros. George E. Bond, P.M., I.P.M.; C. McArthur Butler, S.W.; James Bartlett, J.W.; F. J. Eedle, P.P.G. Supt. Wks. Essex, Treasurer; E. J. Partridge, Secretary; Col. F. Seymour Leslie, S.D.; David Morgan, J.D.; Cholton James, P.P.G. Swd. Br., S. Wales, D.C.; Herbert William Matthews, I.G.; Edwin J. Sadgrove and Sydney Marsland, Stewards; and William Yeo, Tyler.

A Committee having been appointed to frame the By-laws, there were then six propositions for initiation and four as joining members. The following is a list of Founders in addition to the officers above mentioned :—

Bros. Boyer, P.M. 442, P.P.G. Org,, Norths. and Hunts. ; Harry E. Hawker, P.M., 2208, P.P.G.J.D., Hants. and Isle of Wight; R. Frank Vallance, P.M. 1852, Prov. G.S.D. Notts.; John William Dyson, P.M. 2520, P.P.G. Supt. Wks. Northumberland; H. A. Whitburn, P.M. 2317; A. Gilbey Latham, P.M. 1180; Tom Cook, I.G. 2387; F. W. Kinneir Tarte, W.M. 1479; R. S. England, J.D. 1024; Walter W. Thomas, 1570; Alfred George Ware, 3037; S. Davidge Pitts, 334; A. Y. Mayell, 2416, 1271.

At the banqueting table the following visitors sat down, in addition to the Founders:

Bros. the Very Rev. the Dean of Bocking, P.G.C.; Thomas Fraser, Grand Treasurer; Henry L. Florence, P.G. Supt. Works; A. J. Solomon, Prov. G. Treas. S. Wales; Frank Richardson, P. Dep. G. Reg., G.D. of C.; A. Burnett Brown, G. Supt. Works; J. Morrison McLeod, P.G. Std. Br., Sec., R.M.I. for Boys; William Shurmur, P.G. Std. Br. Eng., P.P.G. Treas. Essex; James Stephens, P. Dep. G.D.C.; T. W. Chant, A.G.D.C.; Thos. J. Ralling, P.G.A.D.C., Prov. G. Sec. Essex; Thomas A. Bullock, P.G. Swd. Br.; Henry Sadler, G. Tyler; Arthur C. Vallance, Charles Day, P.P.A.G.D.C. Kent; Herbert F. Whyman, P.P.G.J.D. Kent; Charles E. Skinner, P.P.G.J.D. Kent; G. Jackson Crow, J. B. Walker, P.P.G. Swd. Br. Surrey; Marsh, A. W. Osborn, A. E. Mullins, W. T. Morgan, P.P.G. Swd., Br. S. Wales; W. B. Ferrier, P.P.G.J.W. S. Wales; W. Morgan, P.P.G.D.C. S. Wales; J. F. Whitehead, R. J. Godson, E. Whitfield Burnett, S. F. Fenning, Atkinson, Rev. Ernest B. Lock, R. W. Jourmet, D. Legat Fulton, W. S. Martin, W. Hotten George, G. W. Pridmore, Mason, A. Hume Nicholl, P.G. Steward, Essex; H. F. Cain, E. R. Woodward, P.P.G. Supt. Works Norfolk; H. Weber Brown, J. Tollworthy, Walter Dennis, A. A. Reeve, C. E. Eade, Sydney H. Meyers, F. Clifford Goodman, P.P.G. Steward Essex; R. S. England, C. W. Jeffreys, A. W. Freeman, J. Jellis, Money Marsland, G. H. Cox, Arthur Seymour Jennings, W.M. 3230; John Selley, F. H. Witts, Elijah Jones, P.P.S.G.D. Staffs.; R. Harvey Barton, D. A. Ross, Pro. G. Supt. Works, Middlesex.

The usual loyal and Masonic toasts having been honoured, the W.M. in proposing the toast of the " Grand Officers, Past and Present," said that they were particularly favoured that night with the presence of an unusually large number of Grand Officers, in addition to the Consecrating Officers.

Bro. Thomas Fraser, Grand Treasurer, responded, and said he felt sure that The Society of Architects Lodge would be one of the most important Lodges in London, and he wished them all happiness and prosperity.

Bro. F. J. Eedle then proposed the toast of " The Masonic Charities." He had been much impressed by the beautiful address of the Very Rev. the Dean of Bocking, and his exhortation to them to build solidly. Their new Lodge would be erected on a very solid foundation if they took charity as that foundation. It was the foundation of the whole of the Order. He coupled with the toast the name of Bro. James Morrison McLeod, P.G. Swd. Br.

Bro. McLeod, in response, said that the Craft in its generosity was unparalleled by any other institution in the world. It was the envy of those outside and the pride of every Mason. The Society of Architects Lodge would, he was certain, do its part fully and completely in assisting to maintain the Masonic Charities. He congratulated them most heartily on the very successful send-off they had had.

The W.M. then proposed the toast of "The Consecrating Officers." There was not a Brother present at the Consecration who could have failed to have been deeply impressed with the ceremony. It was a matter of regret that Bro. Sir Edward Letchworth could not stay to their banquet, but in his absence he would ask the Very Rev. the Dean of Bocking to kindly respond to this toast. They were proud to have among the Consecrating Officers two Grand Officers who were members of their own profession, namely, the Bros. A. Burnett Brown, G. Supt. Works, and Henry L. Florence, P.G. Supt. Works; and also Thomas A. Bullock, P.G. Std. Br., who had taken a very great deal of interest in their Lodge.

The Dean of Bocking, in response, said that he had not quite realised until then that this Lodge, having members in all parts of the country—indeed, of the Empire—would be pretty sure to initiate gentlemen in London from different parts of the country. As a Welshman he would be very glad if this came about, because any newly-admitted Welshmen would be able to see the difference in conducting the ceremonies in the two places. Before concluding, he desired to tell them a little story. He had recently employed an architect, and after the completion of the work the builder came to him and said that if he had another building to erect he could save him a lot of money, as he could get out the plans and erect the house without the assistance of an architect and without a specification. He (the Dean) responded that he would in turn tell the builder how to save money. He said that there were certain men in blue on the streets who cost a good deal of money for their maintenance, and he thought that if one suggestion was acted upon that these men might be done away with also.

The I.P.M., Bro. Geo. E. Bond, in proposing the toast of "The W.M.," said that most of the Founders had been closely associated with him (the W.M.) in the Council Chamber of The Society of Architects. They had all been impressed with his ability and administrative qualities. After all, a Lodge was very human in its interests, and he felt certain that the abilities which the W.M. had shown himself to possess outside would be equally marked within the Lodge, and that at the end of a year he would be found to have retained in every way the noble traditions of their Craft.

In response, the W.M. said that he felt assured, from the number of Founders and the number of propositions heard that evening, that The Society of Architects Lodge was one which was really and truly required. He was deeply sensible of the honour which had been conferred upon him in making him the first Master, and he devoutly hoped that his health would be maintained so that he could deal with the

large amount of work which was coming forward. A pleasant feature of the formation of their Lodge was this, that every one of the Founders who had already passed the chair readily gave way when the officers were selected to others who had not been so fortunate, so as to give them a chance of going on. He was aware that the officers were zealous and hard-working, and he was delighted with the grand send-off they had had that night.

Bros. R. Harvey Barton, H. Weber Brown, Dr. W. Hotten George, and F. Clifford Goodman responded on behalf of "The Visitors."

The toasts of "The Treasurer and Secretary" and "The Officers of the Lodge" concluded an exceedingly pleasant and profitable evening. The musical arrangements were of an unusually high order of excellence, and were conducted under the direction of Bro. Turle Lee, who also acted as accompanist. The artistes included Miss Edith Evans, Miss Gurney Jones, and Bros. Harry Jowett, William Maxwell, and Bertram Mills. Bro. Goddard, P.M., acted as Toastmaster.

Review.

Modern Cottages and Villas. A series of designs for small houses costing from £150 to £1,000. The designs are selected from the *Illustrated Carpenter and Builder*, with an introduction and descriptive notes by Hugh B. Philpot. John Dicks Press, Ltd., Arundel Street, Strand, W.C. Price 1*s*.

Taking them collectively these are a very useful set of plans and designs, but unfortunately several of them show individual faults in planning, such, for instance, as the placing of the kitchen door exactly opposite the front entrance. In the plan on page 46, assuming the north point to be correctly indicated, the larder is shown facing due south. On page 77, in the larger of the alternative ground plans, the kitchen and scullery are so situated as to render it necessary to cross the hall to get from one to the other. In a house of the size depicted on pages 88 and 89 it would be a great improvement to provide on the ground floor a second w.c. and a pantry. It is a good rule for the word pantry to be used to indicate the place for the washing up and storage of glasses, lighter crockery, &c., and leave the word larder to denote the place allotted for the storage of food. The plan on page 98 might be improved by having the dining and drawing rooms reversed and the kitchen department entered opposite the dining-room door. This would mean easy service, and by placing a door to the lobby would effectively cut this part of the house off. The relative position of dining-room to kitchen should always be carefully considered so as to avoid having to carry everything through the hall. The plan on page 88 is a case in point. Some of the elevations no doubt will look well in execution, but others are distinctly commonplace. The prices allotted per foot cube in many cases seem to be on the low side; but this is a matter which can only be judged by the conditions prevailing in the districts selected. In spite of its defects in matters of detail, the book contains many useful hints to building owners, architects, and others interested in the housing question. Its price brings it well within the reach of all, and it should command a ready sale.

Proceedings.

THE Twenty-third Annual General Meeting of The Society of Architects was held at Staple Inn Buildings, Holborn, W.C., on Thursday, October 17th, 1907, at 8 p.m. The President, Mr. Albert E. Pridmore having taken the Chair, the minutes of the previous Annual General Meeting were read, confirmed and signed.

The following nominations were then announced :—

For Membership :—

Algar. Albert Edmund,	Shanghai, China.
Broadbent. William,	Redhall Chambers, Guildford Street, Leeds.
Chambers. Walter Ashbridge,	Palli Hill, Branda, Bombay.
Chevalier. Hammond Chittenden,	R.I.E. College, Cooper's Hill.
Curram. Edgar Septimus,	137, Rosendale Road, West Dulwich, S.E.
Davidson. Thomas Gerrard,	44, Great Russell Street, W.C.
Foster. William Frederick,	24, Heslop Road, Balham, S.W.
Glendinning. James John,	15, Commercial Street, Halifax.
Howden. Robert, a.r.v.i.a.,	Johannesburg, South Africa.
Jolly. Pearson Alexander Adam,	Apethorpe, Wansford, Northamptonshire.
Katrak. Navroji Hormasji, a.m.inst.c.e.,	Town Hall, Bombay, India.
Kendall. Herbert,	1, Salterns Villas, Parkstone, Dorset.
Lawson. Vincent Alexander,	17, Rowcroft, Stroud, Gloucestershire.
Moffatt. Walker Goldstraw, a.r.i.b.a.,	Johannesburg, South Africa.
Morgan. William Vincent, a.r.i.b.a.,	24, King Street, Carmarthen.
Oldfield, Henry,	Workington.
Oliver. Henry,	4, Whitehall Court, S.W.
Somake, Moses J. H.,	Karachi, Sind, India.
Williams. Arthur Stanley,	Llandilo.

For Studentship :—

Kelly. Harry,	Glenavon, Newport Road, Barnstaple.
Jones. David John,	62, High Street, Llanelly.
Deakin. Geoffrey Ward,	10, Berwick Road, Shrewsbury.
Evans. Benjamin Edward,	Ivy Bank, Brighton Road, Horley.
Field. Fred,	Annandale, Winnington, Northwich.
Haworth. Philip,	Dacca House, Chorley, Lancashire.
Maddox. Frank Morrall,	4, Dogpole, Shrewsbury.
Newey. Ernest John,	251, Staveley Road, Wolverhampton.
Palmer. Albert Edward,	Melton Street, Melton Constable.
Palmer. Frederick Charles,	28, Sheen Lane, Mortlake, S.W.
Roberts. Douglas Henry,	Clent House, St. John's, Worcester.
Voce. Thomas John Norman Garnett,	28, Wolverhampton Street, Dudley.
Weeks. Herbert John,	4, Western Crescent, Wamer St., Paignton.
Whittaker. Fred,	5, Foster Street, Appleton, Widnes.
Williamson. Alfred,	75, Church Road, Northwich.

The ballot was then taken and the following were declared to be duly elected :—

As Members :—

Chesterton. Frank Sidney,	52, Cheapside, E.C.
Meakin. Thomas Reginald John,	Rochdene, Albany Road, Coventry.
Salmon. Charles Edgar,	Bell Street, Reigate, Surrey.

As Students :—

Davies. Arthur Thomas,	5, Danby Street, East Dulwich, S.E.
Dixon. Harold Osborn,	The Firs, Coldred, Dover.
Duell. Charles Gordon,	12, Clarence Road, Kew Gardens, S.W.
McLean. Archibald John Chattan,	Benwyris, Lancaster Road, Brighton.

Mr. Ellis Marsland (London) Hon. Secretary, read the Council's Annual Report, and in moving its adoption said the Society could congratulate itself on the steady progress shown during the year.

Mr. Walter W. Thomas, j.p. (Liverpool) Past President, seconded the motion.

Mr. G. A. T. Middleton, a.r.i.b.a. (London), Vice-President, said that the Council's Annual Report was the only means whereby they could inform the members generally of what had taken place behind the scenes. Once a year the Council came forward to show that the interests of the Society and its members had been looked after. He referred to the recent death of Mr. William Leck, f.r.i.b.a., the first President of the South African Branch of the Society, and recalled the fact that in open competition he won the design for their Certificate of Membership in the very first year of the Society's existence. In Mr. Leck they had lost a man of considerable renown. Coming into prominence in the Society in its very earliest years he rose to be one of the first architects in South Africa, and erected a considerable number of highly important works, including the Stock Exchange in Johannesburg quite recently. The Council had been very fully occupied during the past year in connection with the question of the training of the Society's students. This had entailed an immense amount of additional labour, but they hoped before long to prove that it had been well spent. With regard to the Library they had a good nucleus, but it was still only a nucleus. It was good so far as it went, and a great deal of pains had been taken to secure the best modern works as they came out, but they certainly wanted a better and more extensive library containing a greater number of standard works, particularly with a view to their use by Students of the Society, who, individually, perhaps, could not afford the expensive volumes which the Society could provide. The Library ought to be very much better after twenty years of existence an it was at the present time, and the more they admitted this the more likely they were to get members to contribute towards its extension. Referring again to the Students' class, Mr. Middleton said it only actually came into existence a year ago, when it was made a recognised part of the Society's

organisation, and already, under the chairmanship of Mr. Mead it had taken a definite place. They had their Studentships and Scholarships, and had recently instituted a system of tuition by correspondence for the advantage of the Students scattered over the country who could not attend classes. Class work and class teaching was managed by other organisations in certain definite centres, but it was in outlying districts that the Society was attempting to help its members, and in doing so it was opening fresh ground. They sincerely hoped that it would prove a successful experiment, and thus form a "nursery" from which the Society could recruit capable architects in the future.

Mr. Walter W. Thomas, j.p. (Liverpool) Past-President, referring to Mr. Middleton's remarks regarding the Library, thought that in connection with that matter the Society should sooner or later consider the question of new quarters, and he hoped that the time would not be far distant when they would have a permanent library and place of meeting.

Mr. G. Gard Pye (London) Past-Vice-President, supported the resolution, and said the Council was to be congratulated upon the manner in which it had carried out its duties. The report showed solid progress and the Council's work was fully appreciated. He hoped the membership of the Society would soon run into four figures, and that the Journal would prove a useful publication to members, and also to the students. He agreed with Mr. Thomas that they ought to have premises of their own. They had to thank Mr. Pridmore, the retiring President, for what he had done during his term of office, as it was to him they were indebted for the presence of the Lord Mayor at the Annual Dinner and the general advancement of the Society in the City of London. Next session he hoped to see a continuation of the one-day excursions which the Society had held from time to time. He had in mind the trip to Winchester last November and thought it most instructive to be able to view constructional work on the spot. The matter of Registration—the hardy annual—was in safe hands. The Hon. Secretary, Mr. Ellis Marsland, had registration at heart and could be relied upon to see that everything possible was done to further the cause. He was sorry to see that the Engineers had raised an objection to the Bill on a point of detail, but he felt sure any little difficulties could be overcome. With regard to the Building Act, the Council was perfectly right in objecting to the London County Council throwing extra work on architects. They had enough to do for their fees as it was, and the District Surveyors were quite capable of dealing with questions of the kind referred to. In conclusion, he congratulated the Society upon the formation of a Masonic Lodge, and hoped that it would prosper and be of assistance to the Society in years to come.

The President then moved the adoption of the report from the chair and the motion was carried unanimously.

The Scrutineers, Messrs. Sydney Marsland and W. R. Manning, presented their report showing that 153 voting papers had been received, of which ten were invalid.

The result of the voting was as follows :—

President.—R. F. Vallance, F.R.I.B.A., Mansfield. Unanimous.
Vice-Presidents.—G. A. T. Middleton, A.R.I.B.A., London, 105; G. E. Bond, Rochester, 89.
Honorary Secretary.—Ellis Marsland, London. Unanimous.
Honorary Treasurer.—B. R. Tucker, ,, ,,
Honorary Librarian.—R. G. Bare, ,, ,,
Council.—Henry Adams, M.Inst.C.E., London, 126 votes; James Bartlett, 119; F. W. Chancellor, M.A., F.R.I.B.A., Chelmsford, 130; J. B. Corby, F.S.I., Stamford, 117; T. W. Cotman, Ipswich, 113; H. V. Milnes Emerson, London, 104; H. E. Hawker, F.S.I., Bournemouth, 110, Cholton James, F.R.I.B.A., Cardiff, 133; W. J. Jennings, J.P., F.S.I., Canterbury, 131; Col. F. S. Leslie, R.E., Woolwich, 133; H. W. Matthews, Bath, 121; C. H. Mead, London, 118; E. J. Sadgrove, F.R.I.B.A., London, 131; Anthony Scott, Dublin, 112; W. Scott-Deakin, F.R.I.B.A., Shrewsbury, 129; T. F. Tickner, F.R.I.B.A., Coventry, 129, J. Fletcher Trew, Gloucester, 102; Percy B. Tubbs, F.R.I.B.A., London, 130.

Mr. Albert E. Pridmore, the retiring President, then invested Mr. R. F. Vallance with the Badge of Office, and the newly-elected President occupied the chair for the remainder of the meeting.

Mr. R. F. Vallance, F.R.I.B.A. (Mansfield), in acknowledging the high honour which the members of the Society had conferred upon him in electing him to the Presidential chair, said it was very true that the work of this progressive Society was increasing rapidly year by year. It would be his endeavour with the assistance of his colleagues on the Council to carry out to the best advantage and in the interests of members and architecture generally, the work which devolved upon him, and he hoped to be able to uphold the position with the dignity it deserved.

Mr. Walter W. Thomas, J.P. (Liverpool), Past-President, in moving a vote of thanks to Mr. Pridmore for the very able way in which he had carried out his duties as President for the past two years, said that the progress of a Society and its recognition in public life were great matters, and if they had not a good President to conduct their affiairs they were more likely to go backwards than forwards. They had had much important work before them during the last few years, and Mr. Pridmore had done everything they could possibly desire in his official capacity to facilitate that work. One of his last acts was to assist in founding a Masonic Lodge in connection with the Society, and the magnificent meeting they had the previous evening, when the new Lodge was consecrated, bore witness to its popularity, and augured well for its future.

Mr. G. A. T. Middleton, A.R.I.B.A. (Vice-President) seconded the vote of thanks with great pleasure. Those on the Council knew what strenuous work Mr. Pridmore

had done and what onerous duties those of a President were. He had had some slight idea of what they were like during a part of Mr. Pridmore's illness for just a short while, so that he could understand the enormous amount of work involved. Each successive President had an opportunity of doing something fresh for the Society from his predecessors. They owed to Mr. Pridmore a certain influence which they had obtained with the Corporation of the City of London, which otherwise they could never have expected. Each year Mr. Pridmore had done something in that way. He went to Paris with the City Corporation as their President and acted in that capacity while there to the honour and credit of the Society. This year, through the same agency, they had the Lord Mayor and Sheriffs as their guests at the Annual Dinner.

Mr. R. F. Vallance, f.r.i.b.a. (Mansfield) bore testimony to the excellent work which Mr. Pridmore had done for the Society. He had been, he thought, particularly conspicuous in instituting more social functions into the proceedings of the Society, which during the past year had gone no little way towards the good fellowship of its members in making them better known to each other and more proud of their Society altogether. He referred to the Smoking Concert, the memorable visit to Bath for the success of which they owed a good deal to Mr. Pridmore, and, as a climax to a successful year, the inauguration of a Masonic Lodge.

Mr. Albert E. Pridmore (London) thanked Mr. Thomas for his remarks and those who had supported them. It was a high honour when two years ago they had elected him to the office of President and he considered it a mark of great confidence when they re-elected him a year ago. He was mindful of the responsibilities attaching to the position, but he felt that he could say with truth that his services had met with the approval of the members. The work of the Society was greatly increasing and in due proportion the responsibility of its President increased, and its position in the architectural profession was assured. He would like to amplify Mr. Middleton's remarks concerning the library by saying that its size was not what it should be. Some members had been kind enough to make contributions, but he hoped that more would come forward with something in the way of books useful to the many students and also to those members of the Society who could not boast a library such as their own. It was a very great pleasure to the Council to see such a large increase in the number of students within a comparatively short time, and which justified the steps they had recently taken in instituting the system of Correspondence Classes, for the bringing about of which they were principally indebted to Mr. Bartlett, Mr. Mead, and Mr. Middleton. A reference had been made to the very pleasant trip to Bath. He thought social functions of that sort in enabling them to see interesting buildings and to meet members of the Society from all parts of the country, whom they had hitherto only known on paper and not as friends,

did a great deal of good. To the members of the Council he had to express his unqualified thanks for their support in the performance of his duties. He tendered his most sincere thanks for the unvarying courtesies he had received from all, but particularly from their estimable Secretary whom he could not sufficiently praise. He congratulated Mr. Vallance on his election to the chair and said as long as he lived he would do his utmost to assist the Society and its members.

Mr. G. Gard Pye (London), Past Vice-President, in proposing a vote of thanks to the retiring members of the Council, thought all would agree that the report showed that the Council had done its duty to the Society, and it was with much pleasure that he expressed on behalf of the members their appreciation of those services. Of the four members of the Council retiring, Mr. Richards had been on the Council several times and they were very sorry to lose his services, Mr. Cancellor had arranged that most successful trip to Winchester, Mr. Kinneir Tarte, one of their oldest members, was going abroad, and Mr. Leest had done good service to the Society and their thanks were due to him for the ardour he had displayed, particularly in connection with the Students' section.

Mr. R. A. Jack seconded the vote with much pleasure.

Mr. Edgar M. Leest, J.P. (Devonport), as the only retiring Member of the Council present, returned thanks for the resolution which had been carried so kindly. He regretted that under the rules of the Society he was unable to become a candidate again for the Council, but under pressure from friends he had agreed to be nominated as a candidate for a Vice-Presidency. He had been unfortunate in the ballot, but personally he was delighted, because Mr. Middleton and Mr. Bond, by their residence in or proximity to London, could attend to the work of the Society far better than one who lived in far-off Devon. He would always further the interests of the Society so far as laid in his power, being particularly desirous of doing what he could for the students of the Society, because he felt that the more they educated their younger brethren the better it would be eventually for the profession and the generation to come.

Mr. E. J. Hammond (New Brompton), in proposing a vote of thanks to the Honorary Officers, said their respective merits were widely known and although he presented the vote in a triple form he hoped it would be appreciated none the less.

Mr. Herbert W. Matthews (Bath), seconded the vote of thanks and said that it was largely owing to the zeal of the Honorary Officers that the success of the Society was due. He took that opportunity of thanking the members for electing him to a seat on the Council. It would be his earnest endeavour to do everything in his power to assist in the work of the Council, to further the interests of the Society and its work in all parts of the country.

The proposition was then put from the chair and carried unanimously.

Mr. Ellis Marsland (Hon. Secretary), in returning thanks,said it was fourteen years ago that they first elected him to the office of Honorary Secretary. He did not wish to monopolise the office, but when nominated by the Council he felt it his duty to stand. It was an honour to be the Honorary Secretary of the Society, and one perhaps, that other members of the Society coveted. He would be most willing to stand aside in favour of any other gentleman who aspired to the office, and he assured them that when the Council ceased to nominate him he would not go outside to get re-nominated for the office.

Mr. B. R. Tucker (Hon. Treasurer), in thanking the members for re-electing him to office said that his duties were light but important. It was a pleasure to him to serve the Society, and he would do so as long as they wished him to. In the meantime, he would see that their finances were carefully guarded.

Mr. R. G. Bare (Honorary Librarian) also returned thanks, and said that he had the success of the Library at heart and whenever he had an opportunity he appealed to the members for donations in books or funds. He hoped that in course of time with the support of all members of the Society, they would get a really good library together. The Council had promised him support in the way of funds, which should be carefully spent with that object. He desired particularly to acknowledge the support he had received from the President, Mr. Pridmore, who had been most liberal both in donations and gifts of books during his two years' term of office.

Mr. Cholton James, f.r.i.b.a. (Cardiff) wished to associate his name with the vote of thanks to their outgoing President, and also to thank the members of the Society for again electing him to the Council and for their continued confidence.

The proposal which he rose to make was that of a vote of thanks to the Secretary and his staff. They all knew that Mr. Butler had a tremendous amount of work to get through in connection with the Society, and as it increased in membership, so did the work, and that he had the interests of the Society at heart was undoubted. That had been duly recognised by the Council.

Col. F. S. Leslie, r.e. (Woolwich), seconded the vote with much pleasure, and said he had been associated with Mr. Butler in connection with the Society's business ever since his appointment, and he was of opinion that no Secretary could exceed him in zeal, ability, tact and all the other necessary qualifications. He could also say the same for his limited staff; they were always ready and willing to go out of their way to do whatever was wanted.

Mr. Walter W. Thomas, j.p., Past-President (Liverpool), warmly supported the proposition and hoped their Secretary would be long spared to continue the excellent work he had done for the Society.

Mr. B. R. Tucker (Hon. Treasurer), said he had had a great deal to do with Mr. Butler and had always found him obliging and generous in all his efforts to give him information. He also thanked Mr. Butler's chief clerk, who so readily and satisfactorily answered the very numerous questions he had to put to him.

Mr. R. F. Vallance, F.R.I.B.A. (Mansfield), also supported the proposition which was carried unanimously.

Mr. C. McArthur Butler (Secretary) returned thanks for the kind manner in which the vote had been proposed and supported, and expressed his appreciation of the extension of the compliment to the staff. He was specially indebted to his chief assistant, Mr. Wanmer for his unremitting attention and loyal support.

Mr. F. W. Witts (London) proposed and Mr. R. G. Bare (London) seconded a vote of thanks to the Scrutineers for their arduous task, which was carried unanimously.

The proceedings then terminated.

The London County Hall Competition.

Mr. Norman Shaw, R.A., and Mr. W. E. Riley, F.R.I.B.A., the two assessors appointed, report that there were ninety-nine designs, the work of one hundred and fifty-two architects. Of these architects, eight were of foreign birth. 1,199 drawings were submitted to illustrate the designs.

The names of the fifteen authors of designs selected by the assessors are :—

Mr. R. F. Atkinson, F.R.I.B.A.; Mr. H. J. Blanc, F.R.I.B.A., R.S.A.; Mr. G. Washington Browne; Mr. T. Davison, A.R.I.B.A.; Mr. M. J. Dawson, A.R.I.B.A.; Mr. J. B. Fulton; Messrs. Gardner and Hill; Mr. W. Haywood; Messrs. Houston and Horne; Messrs. Jemmet and McCombie; Mr. R. Knott; Messrs. A. Marshall Mackenzie (F.R.I.B.A., A.R.S.A.) and Son; Messrs. Russell and Cooper, FF.R.I.B.A.; Messrs. Warwick and Hall, AA.R.I.B.A.; Messrs. Clyde Young and E. W. Poley, AA.R.I.B.A.

The names of the eight architects selected by the Council are :—

Mr. J. Belcher, A.R.A., P.R.I.B.A.; Mr. W. Flockhart, F.R.I.B.A. Mr. Ernest George, F.R.I.B.A.; Mr. H. T. Hare, F.R.I.B.A.; Mr. T. G. Jackson, R.A.; Mr. E. L. Lutyens, F.R.I.B.A.; Mr. E. W. Mountford, F.R.I.B.A.; Messrs. Nicholson and Corlette (Sir Charles Nicholson, Bt., M.A., F.R.I.B.A., and Mr. H. C. Corlette, F.R.I.B.A.)

Other architects of distinction were asked by the Council whether they were willing to compete, but they were unable to accept the invitation.

The Society of Architects Lodge, No. 3244.

Consecrated October 16th, 1907.

The Lodge meets at the Liverpool Street Hotel, E.C., on the second Wednesday in November, January, March and May. The Secretary is Mr. E. J. Partridge, Bank Chambers, Richmond, Surrey.

Twenty-third Annual Report of the Council

November, 1906, to October, 1907.

YOUR Council has pleasure in reporting a satisfactory increase in the membership of the Society during the past year.

Fifty-four new members and seventy-one new students have been elected. One member has been re-instated and three transferred to the "Retired" list, so that, after allowing for deaths, removals and resignations, the total membership stands at eight hundred and forty-three, an increase of sixty-seven over last year.

Intimation has been received of the death of the following members:—

A. Van Assche, Hon. Member (Ghent); C. Botham (Brighton); W. J. B. Carter (Shanghai); A. R. Gradwell (Blackburn); D. Jenkins, F.R.I.B.A. (Llandilo); W. Leck, F.R.I.B.A. Pres. S. A. Branch (Johannesburg); A. Marks (Merthyr Tydfil).

The numerical growth of the Society is largely due to the steps taken by your Council in making its objects better known, by means of a pamphlet published early in the Session, explanatory of its aims and scope, and to the co-operation of the members in that direction.

A question which has received consideration is the advisability of closing the membership, after a given time, to all except those who qualify by examination, but your Council felt that the time was not yet ripe for such a step.

The first year's working under the revised Articles of Association has shown that while a great deal more work has been thrown upon the members of your Council in regard to interim committee meetings, the business of the Society has been greatly facilitated, and it is clear that it would have been impossible to properly cope with the work under the old conditions.

As regards details affecting the members, a few have taken advantage of the "Retiring" clause, and the Society thereby still retains their personal support, which it would otherwise have lost.

No foreign member has as yet compounded for his subscription, though it was at the request of these members that the alteration in this respect was made.

The result of placing the Students upon a definite footing and giving them certain powers in their own Section has resulted in various schemes being brought forward, all tending to the development of the Society. These are referred to in detail later on.

THE SOCIETY'S JOURNAL.

Seven years ago the Journal was considerably enlarged in scope and size, and published under the title of *The Architects' Magazine*, and, the object then in view having been attained, your Council has decided that at the termination of the present volume, the publication shall revert to its old title of *The Journal of The Society of Architects*, and be printed in a form rather larger than the old Journal and in somewhat similar style, at the same time retaining some of the features of the present publication.

The new Journal will be under the Editorship of the Secretary, and the Society will lose the services of Mr. C. Palmer, a journalist of experience, who for the past seven years has been associated with the Secretary in this work, and to whom the thanks of the Society are due for his able and willing co-operation.

Another change which has taken place in connection with the publications

of the Society, is the determination of the advertisement contract with an agent, and the organisation of a Publication Advertisement Department at headquarters, a step which has already proved itself a right one, inasmuch as the income from advertisements has since then considerably increased, and this department, will, it is anticipated, become a valuable source of revenue.

EXAMINATIONS FOR MEMBERSHIP.

The half-yearly examinations have been held as in previous years in Manchester and London, and arrangements have been made for centres in Johannesburg, Pietermaritzburg and Cape Town, under the auspices of the South African Branch of the Society.

The examination syllabus has been revised, particularly in regard to the facilities afforded to Students of the Society, who are now able, if they wish, to take the examination by sections, and to secure in connection therewith, sectional certificates, exchangeable in due course for the full membership certificate.

Another innovation in the syllabus is that the subject for design is to be taken on the last day and announced on the first, so as to give candidates more time for consideration of the problem set.

Several changes have been made in the Board of Examiners, the subjects in Section I., Subject *a* (Planning and Design), being now set by one examiner instead of two, Mr. R. Frank Vallance, F.R.I.B.A. (*Vice-President*), retiring from this position, leaving the work in the hands of Mr. W. A. Scott, A.R.I.B.A., of Dublin.

Mr. C. H. Mead, M.R.SAN.INST., has been appointed examiner in Section IV. (Sanitation) in the place of Mr. C. E. Gritton, A.M.INST.C.E.

STUDENTS' SECTION.

The Students' Committee met early in the Session and appointed Mr. C. H. Mead (Member of Council) as its Chairman. A form of "return" was afterwards sent to every Student with a view of eliciting opinions as to the best method of developing this section, with the result that a suggestion was made to your Council for the organisation of correspondence classes leading up to the Society's examination.

This was approved in principle and referred to the Examination Committee on points of detail, and a scheme was brought forward for a three years' course, and adopted, subject to sufficient support being forthcoming from the students, the examiners appointed being the Chairman of Committee, Mr. C. H. Mead, and Mr. J. Bartlett, a member of the Board of Examiners.

The first year's course has already commenced.

The Travelling Studentship Competition attracted 26 competitors, the subject set being a church to cost not exceeding £5,000. The winner was Mr. J. Drummond Murdoch, of Edinburgh. Your President (Mr. Albert E. Pridmore) again gave a special prize of the value of £3 3*s*., which went to Mr. Hubert Savage, of Muswell Hill, N.

Mr. Edgar M. Leest, J.P. (Member of Council), offered a prize of the value of £3 3*s*. for a design for a Bungalow to be built at a cost of £500. The notice given for this competition was necessarily somewhat short, but there were twelve entries, and the prize was awarded to Mr. C. H. Hudson, of Islington, a second prize of the value of £1 1*s*. being awarded by your Council to Mr. H. W. Smith, of Oxford.

The designs were subsequently on view at the Society's premises, and were also exhibited at the Guildhall, Devonport, through the kindness of Mr. Leest, when

nearly one thousand persons attended during the two days when the drawings were on view. The Mayor and other prominent townsmen took an active part in promoting the success of the Exhibition.

The competitive examination for the Architectural Scholarship 1907, of the value of £10 per annum, tenable for three years, was held in May in London, Liverpool and Shrewsbury, the winner being Mr. G. M. Maddox (Shrewsbury), a pupil of Mr. G. Dickens-Lewis of that town.

THE LIBRARY.

Books in considerable number have been added to the library by gift and purchase, and upwards of 330 volumes have been issued from the loan collection during the Session.

The Society's collection of lantern slides has been supplemented by members, and has several times been made use of for lectures, etc.

It may be noted that all new members are, on election, invited to contribute to the development of the Library by a donation or gift of books, and many of them have liberally responded to your Hon. Librarian's appeal.

A number of members have presented duplicates or other books from their own shelves, and your Council invite the co-operation of every member and student in thus extending the work.

A new catalogue has been prepared and will shortly be ready for issue, and additional book accommodation has been provided.

A competition for a design for a "book plate", was instituted, and a prize of £5 5s. offered, but none of the designs submitted were found to be suitable, and the prize was withheld.

SOCIAL FUNCTIONS.

Last November, on the invitation of Alderman B. D. Cancellor (Member), the Society visited Winchester and inspected the work in progress at the Cathedral, and also paid a visit to the Hospice of St. Cross. The Dean of Winchester, the Surveyor (Mr. Colson, F.R.I.B.A.), the Warden of St. Cross (the Rev. the Hon. St. John Brodrick) and others, met the members and devoted a great deal of time to personally pointing out the features of interest in the buildings under their respective charges.

A new departure, so far as the Society is concerned, was the Smoking Concert given by the President on January 18th, at the Great Eastern Hotel, when an excellent musical programme was much enjoyed by the large party of members and their friends who accepted the President's invitation.

On April 18th, the Twenty-third Annual Dinner was held at De Keyser's Royal Hotel, when the Society was honoured by the presence of the Lord Mayor and Sheriffs of the City of London, Lord Monkswell and other distinguished guests, and there was a large gathering of members and their friends.

The summer excursion was held at Bath, and extended from June 13th to 18th. The arrangements were made by the Society's local representative, Mr. Herbert W. Matthews, and a very cordial reception was given to the party by the Mayor of Bath, members of the Corporation, and other prominent citizens. The itinerary extended into three counties and the visit was most successful and enjoyable, members coming from all parts of the kingdom to take part in it.

A visit was paid to the First Garden City (Letchworth) on September 21st, when the members had an opportunity of seeing the Small Holdings Exhibition and other interesting features of the estate.

EMPLOYMENT REGISTER.

The register has proved a useful medium in a number of cases for the filling of vacancies, but the supply of assistants is greatly in excess of the demand, and there are always suitable candidates wanting places. Members would confer a practical favour upon Students and others, by notifying the Secretary at once of any vacancy in their office.

REGISTRATION.

Early in the Session, the attention of your Council was called to the action of the Incorporated Association of Municipal and County Engineers in circularising the local authorities throughout the kingdom, asking them to oppose the Bill on the grounds that one of its clauses (28) was intended to deprive local authorities of the advice and assistance of their officers on most matters connected with buildings and building plans, and that it would increase the expenses of administration and introduce complications without any corresponding advantages.

Your Council thereupon addressed a letter to the local authorities with the object of showing the true intention of the clause in question, asking them to suspend action pending a conference between representatives of the Society and of the Engineers. The matter is now under consideration by the parties concerned, and your Council will endeavour to meet the views of its opponents so far as can be done without sacrificing the principle contained in the Bill. In the meantime the Bill is in the hands of Mr. Atherley Jones, K.C., M.P., who has undertaken to introduce it at the first favourable opportunity.

Other opposition to the Bill came from the Institution of Civil Engineers of Ireland, who circularised their members on the ground that it was detrimental to their interests.

The real reason, however, for the opposition by the Engineers, appears to be that neither sections of the community represented by the professional bodies referred to, were scheduled in the Bill as being permitted to carry out such architectural work as comes within their province, as is the case with the Institution of Civil Engineers and the Surveyors' Institution.

Your Council, while giving every consideration to representations made to it by parties interested, in regard to points arising out of the Bill, is not in any way relaxing its efforts to secure its progress through Parliament, but is doing everything in its power to bring about the desired result.

Your Council followed up its circular to the Parliamentary candidates, by writing to those who had been returned and who had promised their support, asking them to ballot for the Bill, which a number of them undertook to do, while others who had previously pledged themselves elsewhere for the ballot, offered their support in other ways.

The various social gatherings of the Society at which Members of Parliament were present have been made the means of enlisting their sympathies with excellent results, and your Council is informed that the measure is every year receiving more sympathetic treatment than before at the hands of Members of Parliament.

LONDON BUILDING ACT.

Among various points considered by your Council in connection with the proposed amendment of the London Building Act, was the procedure adopted by the London County Council when giving its approval to plans showing means of escape in case of fire, requiring drawings and details of all balconies and

outside iron staircases to be submitted for approval under Part VII., Section 82, of the Act.

In the opinion of your Council these outside staircases are not temporary buildings or structures and therefore do not come under Part VII. of the Act, but should be dealt with by the District Surveyor under Part VI. of the Act.

The point is an important one for the architectural profession, in view of the additional work involved without adequate remuneration, and equally important to the public as ratepayers in view of the large staff which the L.C.C. must employ to deal with these applications, at a cost which would not be covered by the fees payable.

A resolution embodying your Council's views has been submitted to the L.C.C., and the matter has been referred to the committee dealing with the Act.

It it hoped that, in due course, the London County Council will see its way to give effect to the Society's suggestion.

COUNTY HALL COMPETITION.

Your Council urged upon the L.C.C. the desirability of altering the scale of the plans to be prepared, from 16 to 32 feet to one inch, for convenience both as regards draughtsmanship and subsequent handling. It was found, however, that such an alteration could not conveniently be made.

REPRESENTATION.

Your Council appointed delegates to represent the Society as follows:—

ROYAL INSTITUTE OF PUBLIC HEALTH CONGRESS, ISLE OF MAN, JUNE 25TH.
Mr. Walter W. Thomas, J.P. (*Past President*), Liverpool.

ROYAL SANITARY INSTITUTE CONGRESS, DUBLIN, JUNE 29TH.
Mr. Robert Walker, J.P. (*Past President*), Cork.
Mr. Anthony Scott (*Local Hon. Secretary*), Dublin.

INTERNATIONAL CONGRESS OF SCHOOL HYGIENE, AUGUST 5TH.
Mr. Albert E. Pridmore (*President*), London.
Mr. W. Scott-Deakin, F.R.I.B.A., Shrewsbury.

COMMITTEE ON POSTAL RATES FOR SOCIETY'S PUBLICATIONS.
Mr. C. McArthur Butler (*Secretary*), London.

ARCHITECTS' BENEVOLENT SOCIETY.

Your Council has received intimation that the alteration in the by-laws of the Benevolent Society, giving representation on the Council to corporate bodies contributing not less than £50 to the funds, has been confirmed, and the Society is one of the first to be so represented, its President for the time being having a seat on the Council of the Benevolent Society.

PAPERS AND DISCUSSIONS.

During the past Session papers have been read, and discussions held, on the following subjects:—

1906—Nov. 15th. Presidential Address.
„ Dec. 13th. "Sculpture in Relation to Architecture."
By MR. S. C. KAINES-SMITH, B.A.
1907—Jan. 17th. "The Practice of Architecture in our Smaller Cities and Towns."
By MR. G. E. BOND (*Member*).
„ Feb. 14th. "Byzantine Buildings in Constantinople and Ravenna."
By MR. W. A. SCOTT, A.R.I.B.A. (*Member*).
„ March 14th. "The Effect of Fire on certain building materials and forms of construction, as exemplified by the conflagration at San Francisco."
By MR. ELLIS MARSLAND (*Hon. Secretary*).

1907—April 17th. "Legal Hindrances to Modern Methods of Building Construction," By Mr. Edgar C. Thrupp, A.M.Inst.C.E.

,, May 16th. "Two Benedictine Minsters." By Mr. E. W. Harvey Piper (*Hon. Member*).

BRANCHES OF THE SOCIETY.

Your Council has approved the formation of a branch of the Society in South Africa, with headquarters at Johannesburg. With regard to the officers of the new branch, your Council regrets to announce the recent death of its first President, Mr. William Leck, F.R.I.B.A., who for many years held the post of Local Honorary Secretary of the Society in Johannesburg. The other officers of the branch are:—

Hon. Secretary	Mr. E. H. Waugh (*Local Hon. Secretary*).
,, *Treasurer*	Mr. J. F. Beardwood.
Committee	Messrs. Harris and Wellman.

A Board of Examiners has been formed in connection with the entrance examination for membership in the parent Society, and Johannesburg, Maritzburg and Cape Town will be the centres for the present, while arrangements are being made with the Transvaal University College for the holding of classes leading up to the examination.

Mr. R. G. Kirkby, A.R.I.B.A., of Pietermaritzburg, has been appointed Local Hon. Secretary for that district, and is co-operating with the local branch in organising the examinations.

The branch has been formed with the object of advancing the interests of the Society in South Africa and to conduct its examinations. It does not seek to compete in any way with local architectural bodies, but rather, if occasion arises, to co-operate with them in promoting the advancement of architecture.

APPOINTMENTS.

On a vacancy arising in the office of Hon. Solicitor to the Society, a number of applications were received, from which your Council eventually selected that of Mr. Thos. Baines, of the firm of Wetherfield, Son and Baines, of Gresham Buildings, E.C., who has been appointed to the office.

MATTERS PENDING.

Some of the matters which your Council still has under consideration are: the question of representation of the Society on the council of the National Trust for Places of Historic Interest (now incorporated by Act of Parliament), the Metric System Bill, Post Graduate Lectures, Light and Air, New Premises, and other matters affecting the interests of the Society or its members.

MASONIC LODGE.

Though not strictly a matter in which your Council as such, is concerned, it has pleasure in recording the fact that thanks to the initiative taken by the President and the Secretary some months ago, a meeting of masons connected with the Society was called, with the result that an application was made for a warrant for a Lodge to be called "The Society of Architects Lodge," the President (Mr. Albert E. Pridmore) being unanimously nominated as the first Master.

The application was approved and the warrant granted, and the Lodge was duly consecrated on October 16th at the Great Eastern Hotel, by the Grand Secretary (Sir Edward Letchworth) and other Grand Officers.

The Society of Architect's Lodge, No. 3244, is the first Masonic Lodge identified by name with the architectural profession or with any architectural institution.

Winter Educational Facilities.

Students' Correspondence Classes.

While the young students who can come to London are being considered, an attempt is further being made, says *The Manchester Courier*, by The Society of Architects to meet the requirements of those who are articled in small country places where class teaching is an impossibility. Postal tuition on a novel system has been arranged, and a sufficient number of students has already joined to give the experiment every chance of success.

A Novel Experiment.

Of the various matters referred to in the annual report of The Society of Architects, which was adopted at the general meeting, the growth of the students' section, and its development along the lines of an architectural school to be conducted by correspondence, is that which is the greatest novelty. Postal tuition has hitherto been the work of private instructors only, in architecture, as in other branches of study, but, having proved to be a successful means of imparting knowledge, there can be no reason why it should not be adopted by organised bodies also, and, taking this view, an experiment in that direction is now being made which, if successful, will undoubtedly soon be copied.

Opening New Ground.

Another modern development, says the *Building News*, is that of the correspondence class. Hitherto all work of this kind has been done by private tutors, who, having had to earn their living by its means, have charged fairly for their labour. But they have been able to reach only a limited few of the students located in out-of-the-way country places; and this winter sees the first experiment in organised teaching through the post. A regular course has been instituted by The Society of Architects for those who belong to its class of Students. It has not been largely advertised, being at present, experimental only, and probably it will never be extended to those outside the ranks. The idea upon which it has been devised is a novel one, and gives every promise of success. The Society appeals to a class of student that is not to be approached or assisted by any other means. In competition with nobody, not even with the private tutor—whose work is generally arranged on different systems, aiming, not at preparing for any definite examination, but giving a good practical all-round architectural training, such as will be useful in after-life—the Society has opened new ground, and is to be congratulated upon having done so, provided that the fee charged be fairly commensurate with the instruction given, for the reasons given above, and also to permit of development in the future without taxing the Society's resources too severely.

Loan Library.

The Library contains a collection of modern technical and architectural books which is constantly being brought up-to-date. The majority of the volumes may be borrowed by members and Students, and are sent through the post where necessary, the Society paying carriage one way.

A new catalogue is in preparation. Gifts of books, new or old, or donations to the Library Fund are invited. Reviews of books sent by publishers or authors will appear in *The Journal.*

New Manufactures and Inventions.

A Slab Partition.—A partition which is free from moisture, requires no plastering, and which can be papered at once, possesses such obvious advantages that its introduction must be of interest to architects. Propper's slab partition claims to possess the above advantages. It is made up of cross-shaped slabs of gypsum or other suitable material, moulded in metal frames. These slabs grip and interlock in such a manner as to form a strong and rigid partition or wall, the only essential required being a perfectly level basis. The patent is exploited in the United Kingdom by Messrs. Charles Ingram & Co., of 26, Mark Lane, E.C.

A New Window.—A window of novel construction is being brought out by the Ideal Patent Window Co., of Magdeburg. The two glazed sashes are superimposed in the same plane when the window is closed. The closing of the window is obtained by a double joint between the edge of the top sash and the fixed frame, constructed in such a form that it presses the two sashes one against the other (the lower sash being put in a position of closing), and the fixed frame is so arranged that with the aid of the transverse joints, the window is wind and water tight. When the bolts retaining the lower sash are pulled back, the latter detaches itself from the upper sash, and lowers itself against the border of the fixed frame, and forms an opening for ventilation. More ventilation can be obtained by the arrangement at will of the two sashes counter-balanced by weights in the grooves, which enable them to remain stationary in any position. The principal advantages claimed for the invention are the close fitting of the windows, simple construction, and safe cleaning or ventilation facilities combined with efficiency in working and economy in fixing.

A Novel Door.—Messrs. Pemberton, Arber & Co., of Grays Inn Passage, W.C., whose name is familiar in engineering and kindred work, have, in placing the "Sesame" door on the market, made a distinct advance in catering for the requirements of the down-to-date hotel, shop, or public premises. The door-keeper is conspicuous by his absence, and in his place is a door which opens automatically to the pressure of the foot upon the mat. The idea is at once so simple and its advantages so obvious that it cannot fail to recommend itself.

The Society of Architects.

Examination, October, 1907.

Section I.—ARCHITECTURE. Subject b.—ARCHITECTURAL HISTORY.

WORKED ANSWERS by JAMES BARTLETT, Examiner.

Question 1.—*Give the meaning of the following words and where necessary illustrate with sketches. Eustyle, Diastyle, Hexastyle, Hypæthral, Peripteral, Stylobate.*

Answer 1.—

Eustyle—the term applied to a method of spacing columns with an interval between them equal to $2\frac{1}{4}$ diameters of a column measured at its base.

Diastyle. This also refers to the spacing of columns, the intervening space being in this case equal to three diameters.

Hexastyle—with six columns, for example, a porch six columns in width.

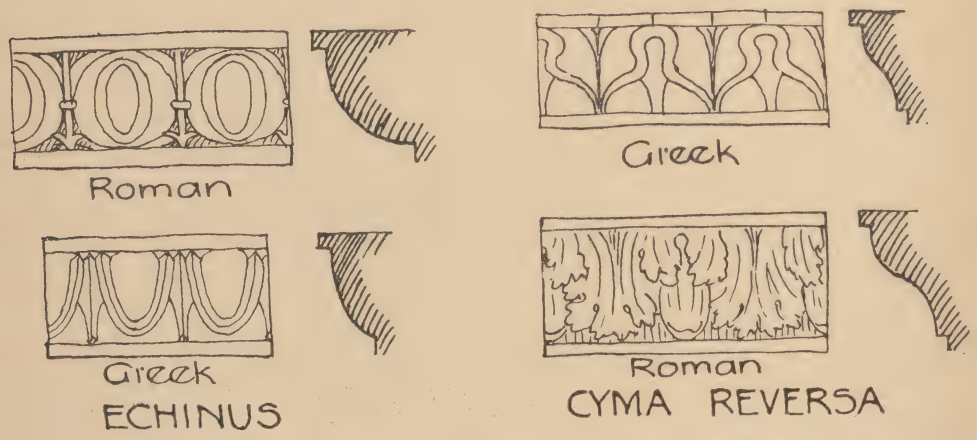
Hypæthral—open to the air—a building partly or entirely without roof or covering.

Peripteral (or peristylar)—entirely surrounded by a range of columns.

Stylobate. The series of steps forming a base upon which many of the ancient edifices were raised.

NOTE.—These terms are generally used in connection with classic architecture.

Question 2.—*Give sections of the following Greek mouldings and sketches of the enrichment used on each. Cyma recta, echinus, cyma reversa. Also similar sections and sketches of enrichment used on the corresponding Roman mouldings.*



Question 3.—*In Greek and Roman buildings two or more orders are frequently employed in the same building. Name an example of each and the orders used, also point out how the orders are arranged in relation to each other.*

Answer 3.—

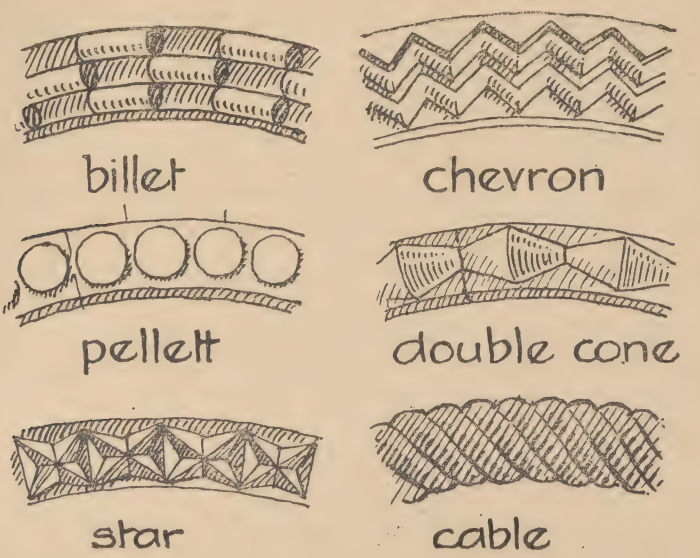
In employing more than one order in the same building the Greeks took great pains to group each different style in the portion of the building allotted to it. This

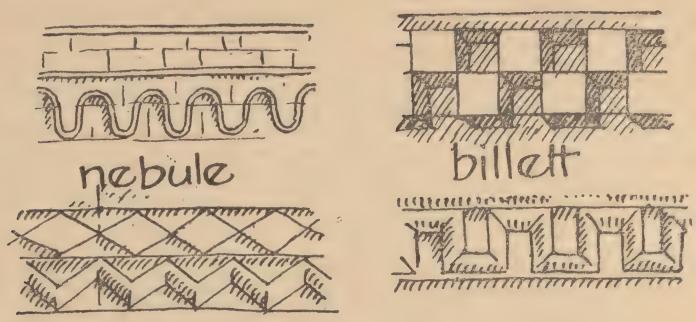
is particularly observable in the Erectheium at Athens. In this case it is thought the building served the purposes of three temples, for it is constructed in three distinct apartments grouped together. One is built with the Ionic order, one with the Corinthian order, while the third is in the Ionic order with a porch of carytids. Where it was desired to place one column above another the same order was used as was done at Eleusis in the temple of Ceres.

The Romans borrowed the orders from the Greeks and adapted them to their own use, altering and modifying their details as they thought fit. They frequently employed two or three different orders, each complete with its entablature in the same building. In early Roman work they were given their proper constructive use in supporting the structure above, but in later Imperial times their use degenerated until they almost invariably took the form of pilasters attached to the face of the building which they were intended to ornament. The Coloseum at Rome is one of the best examples of this misuse of the orders. In that building they are superimposed one upon the other in the form of engaged columns supporting nothing besides the weight of their own entablature. Commencing at the lowest storey with the Tuscan, the second storey is ornamented with the Ionic order, the next with the Corinthian, while upon the fourth storey, consisting of an almost solid surface of wall, pilasters of the Corinthian order are placed. This superimposition of orders was a usual thing with the Roman builders, and made use of in a great many buildings of more than one storey.

Question 4.—*Name ten of the principal Norman mouldings and give a sketch of each.*

Answer 4.—





NORMAN MOULDINGS

Question 5.—*Describe the construction and form of pillars, caps and bases adopted in the Early English, Pointed or Lancet Architecture.*

Answer 5.—The massive pillars of Norman times gradually attained lighter proportions and in the Early English period of English Gothic architecture the column shafts, in consequence of the introduction of the pointed arch, took on the general character of the rest of the structure and became more slender and elegant. The pillars are generally clustered or shaped with a large central cylindrical shaft with four smaller shafts surrounding it as at Salisbury and Westminster. Sometimes the smaller shafts were increased up to eight in number. A form commonly used in early examples was square in shape with rectangular recesses at the four corners, in which stood small circular shafts. Semicircular shafts were formed on the faces of the square. As the style advanced lozenge and oval shaped pillars were often used and shafts were divided at intervals in their height by the insertion of small horizontal bands or moulded belts. Capitals took on a light and elegant appearance due to the carefully grouped undercut mouldings or gracefully carved foliage of conventional character, the stalks of which branched out from the neck of the column, and the foliage curled around the upper portion of the cap. Some of the caps at Westminster Abbey and at Durham and Lincoln Cathedrals are beautiful examples of the work of this period. The bases of columns consisted of rounded and hollowed mouldings having sometimes an octagonal and occasionally a cylindrical base. More often, however, the plinth corresponded in outline with the mouldings of the clustered shafts. The mouldings of the Early English bases were more pronounced; having deeper cut hollows than those of later times.

Question 6.—*Compare the constructive features of window tracery in the Geometrical Decorated style with that used in the middle of the reign of Edward III.*

Answer 6.—The Geometrical or Early Decorated period of English Mediæval architecture, which lasted from the middle of the 13th century to A.D. 1313, is characterised by the large amount of ornament used. In this period Gothic tracery was developed to perfection. The slips of wall between the lights of the windows are reduced to mullions or vertical bars of stone dividing the narrow lights, forming at the same time stems from which branches the perfect geometrical forms of the tracery of the window head. Windows of three lights commonly had three circles pyramidally arranged in the head ; another common type was formed with couplets over the lights from a centre mullion and fill in the large upper spandril with a large circle of traceried stone. The windows of the nave of Exeter cathedral give many pure specimens of this style. They are designed in pairs facing each other from opposite sides of the building, no two on the same side being alike. The windows of Lichfield and Wells cathedrals also belong to this period.

The following period which reached its fullest development about the middle of the reign of Edward III., that is A.D. 1357, is known as the Flowing Curvilinean Decorated. The characteristics of this tracery differ entirely from those of the previous style as the strictly geometrical setting out is abandoned, the curves of the members taking on easy flowing lines, giving graceful irregular forms in the place of circles and regular trefoils. The lights are generally three or four in number, and the mullions continue in wavy lines to the top of the window, intermingling as they go with the other portions of the tracery and forming by their intersections forms of flowing and elongated shape. The west window of York Minster, the Lady chapel at Lichfield, and the east end of the Choir at Bristol, may be instanced as affording examples of the work of this period.

Question 7.—*State what you know of the following men, giving the approximate date of their lives and naming some of their works. Palladio, Sansovino, Vignola, Brunelleschi.*

Answer 7.—

Palladio (1518-1580) was a native of Vicenza in Italy and became one of the leaders in the Venetian school of Renaissance architecture. His designs influenced much of the work of the later Italian architects and through the medium of his published books affected also the work of designers in other European countries. Palladio obtained inspiration from the careful study of classic Roman buildings, many of which he measured and committed to paper. Some of his best known works are : The Arcade surrounding the Town Hall at Vicenza ; The Rotunda or Villa del Capra near Vicenza ; The Church of St. Giorgio Maggiore, Venice (1560) ; The Church of St. Francesco della Vigna (1568) ; The Church of the Redentore (1576).

Giacopo Tatti Sansovino (1479-1572) introduced into his buildings new elements of decoration. He used sculpture freely, applying it so as to harmonise with and emphasise the architectural effect, in this way giving his façades a hitherto unknown

magnificence, as exemplified in the Library of St. Mark (1530), and the Cornaro Palace at Venice (1532). This example of elaborating the elevations to obtain great splendour of effect was followed by later architects, but seldom with such great success. Sansovino's chief designs in addition to those given above, were :—The Mint, Venice (1536), S. Georgio dei Grechi (1536).

Giacomo Barozzi da Vignola (1507-1572) assisted in the design of the Farnese Palace at Rome (1530). He also built the Villa of Pope Julius (1550), a building wonderfully pure in its style and with a façade, simple, dignified and well-proportioned. Vignola employed the Orders with unfailing refinement and good judgment, and with great discernment avoided the mechanical methods employed by many of his contemporaries. His treatise on the proportions and use of the Orders is a classic work. He designed the highly ornate Church of Gesù at Rome (1568), of which the interior is the most noteworthy. The façade is adorned with two storeys of Orders and flanking volutes over the sides.

Filippo Brunelleschi, sculptor and architect, was born in 1377. He designed the dome of the cathedral of Florence, commencing the work in 1420. When he died in 1444, the dome was practically completed. This huge dome forms an octagon of 143 ft. internal diameter, with an inner and an outer shell connected by eight large ribs and sixteen smaller ones. Brunelleschi designed also the Pazzi chapel in Sta. Croce, a charming design of a Greek cross covered at the intersection with a richly decorated dome, and the churches S. Lorenzo (1425) and S. Spirito (1476). Each of these great buildings have a three-aisled nave and transepts with a low dome covering the crossing. The central aisles have flat wooden or plaster ceilings, the side aisles being covered with domical vaults. The details of the mouldings were purely classic. The Old Sacristy of S. Lorenzo was another beautiful design finished with a dome.

Question 8.—*Give a short description of the Palace of the Escurial.*

Answer 8.—The Palace of the Escurial stands about thirty miles from Madrid, the metropolis of Spain. The building was commenced by King Philip II. for his own use, and Herrara was appointed architect in A.D. 1567. It is a rectangular block of buildings, 640 ft. long and 580 ft. wide, comprising the palace, a church, a monastery, and a college, with a projecting wing on the west side, containing the state apartments of the palace, which are situated behind the church. The principal façade is to the east and has the grand entrance placed in a central position. This leads to a large courtyard or atrium from which are entered the different sections of the building. Straight in front lies the church, 320 ft. long by 200 ft. wide, on the left is the monastery with the great court of the palace placed beyond, the whole of the right side being taken up by the college and its great court. The whole of the masonry of the church internally as well as externally is executed in a fine grey

granite worked in a simple, but imposing manner. The exterior façades are uniformly five storeys high with square headed windows, which are placed with rather straggling effect, little or no attempt at grouping being made. The interior impresses one by its quiet and imposing dignity, and the restrained, but beautiful effect of the quiet tones of the masonry and decoration, and on closer examination, the carefully designed details sustain these good impressions.

Question 9.—*Compare shortly the Pyramid of Saccara with that of Suphis.*

Answer 9.—

The Pyramid of Saccara is the only one that does not face exactly north and south. It was attributed by Mariette to Ouenephes of the first dynasty, though now more generally ascribed to Senefron of the third dynasty. It is much smaller than that of Suphis, measuring at the base about 357 ft. by 400 ft., with a height of about 190 ft. Its sides form an angle of about 51 degrees with the horizon, and are constructed in six unequal steps.

The pyramid of Suphis or as it is sometimes named Cheops, is the largest and best known of the ancient tombs of the Kings of Egypt. It measures 760 ft. square at the base, and is 484 ft. high. Originally its volume must have been three and a half millions cubic yards. Its sides slope up an angle of about 52 degrees. The length of the sloping side is 723 ft. It stands upon a plateau of rock, levelled to receive it, and covers 13 acres of ground or an area more than twice the extent of that occupied by St. Peter's at Rome. Being almost a solid structure with the exceptions of some comparatively small apartments and passages, the mass of materials used for its construction as with all the pyramids is enormous. It is built of the beautiful limestone of the country and was originally faced with carefully worked material of the same description. This has since disappeared. The structure contains two large chambers above ground and one cut in the rock below the foundations. These chambers and the passages leading to them are all lined with polished red granite. The main entrance passage slopes up from the doorway on the north side at an angle of 26 degrees, and on reaching the approximate centre of the pyramid enlarges into a chamber 17 ft. by 34 ft., and 19 ft. high, called the King's Chamber. Above this, divided from each other, are five other small apartments. Above the uppermost are two large slabs serving to discharge the superincumbent weight.

Question 10.—*Give a short description of the Roman Catholic Cathedral at Westminster.*

Answer 10.—

This cathedral was erected by the late Mr. J. F. Bentley, and is one of the most remarkable church buildings erected in modern times. Its total length is more than 360 ft., and its width 150 ft. The nave vaulting reaches a height of 111 ft., or

about 10 ft. higher than the choir at Westminster Abbey. At each side of the nave a series of chapels is arranged, the decoration of which is in many cases still incomplete, as is that of a large portion of the interior of the cathedral. East of the nave is the sanctuary, and beyond this at the east end the choir with semi-circular termination. The eastern portion of the cathedral comprising the sancturay, the lateral chapels, and the choir, presents a system of construction essentially Byzantine, the luminous corona of the sanctuary dome being raised aloft on vaulting that seems to be independent of direct support. The choir termination suggest the Romanesque or Lombardic style of Northern Italy. The nave domes have a diameter at their base of 60 ft. The thickness of the domes at the springing is 3 ft., gradually reduced to 13 ins. at the crown.

The sanctuary dome, unlike those of the nave, rises gradually out of the substructure, the extrados of the pendentive forming a pyramidal series of offsets or steps which follow the plan of the dome. The circle developed by the pendentives is 52 ft. in diameter.

The walls are mainly of London stock bricks with roofing of concrete in the form of domes and vaulting, generally with its upper surface exposed, but in some parts covered with a pitched roof to obtain variety of effect. Iron for the purpose of support has not been used in any part of the building.

In the pendentives and the domes for the vaulting of the choir, and the chapels for the more complicated vaulting of the crypt aisles, baptistry and porches, concrete has been used, but for the vaulting of the transepts and the corresponding vaulting of the triforia, brick is the material employed, in order that the deep soffits of the brick supporting arches in front may appear as part of the vaulting behind, and the line of junction between the two should not show.

Qualifying Examination for Membership.

The following candidates have satisfied the examiners and are qualified to make an application for membership :—

H. C. Antcliffe	12, Clonmell Road, Fulham, S.W.
W. J. Pulford (*Student*)	2, Queen Street, Maldon, Essex.
Hugh Byron	79, Bushwood, Leytonstone, N.E.

The following student candidates have secured Sectional Certificates :—

SANITATION.

Ivor C. Morrison	Alma, St. Albans.

PRACTICE AND SANITATION.

V. C. A. Munckton	Wimborne.

Mainly about Members.

A new Baptist chapel is to be built at Tooting. Plans have been prepared by Messrs. Wills, of Derby, for a building which will seat some 800. The total cost, including the site, will be about £6,400.

The General Purposes Committee of the Dudley Town Council recommend the acceptance of the plans for the new Carnegie Free Library prepared by Mr. G. H. Wenyon, of Tipton, in competition.

Mr. H. Cooper Anderson, of Heywood, has been appointed architect to the Heywood Education Authority in the place of the late Mr. J. E. Mills, and is now engaged in the erection of schools at Heywood.

At a special meeting of the Magnus Governors held at the Town Hall, Newark-on-Trent, a communication was read from the Board of Education approving of the scheme and plans for the new Grammar School, at an estimated cost of £10,000. The architects, Messrs. Sheppard & Lockton, were instructed to prepare quantities and obtain tenders at once.

Extensive alterations are being carried out at the London Road Girls' School, Southend, for the Southend Education Committee, from plans prepared by Messrs. Cabuche & Hayward, architects, of Westcliff. This firm was recently awarded third place in a limited competition for a new school at Hyde, to accommondate 1000 children.

New club and institute premises have been built at Needham Market from plans prepared by Mr. Henry J. Wright, of Ipswich. The building is of red brick and terra-cotta, and consists of refreshment and reading rooms, kitchen, pantry, lavatories, etc., on the ground floor, and committee and concert hall capable of seating 150 upstairs.

At Polyphant, near Launceston, a new Wesleyan schoolroom was recently opened. The work has been carried out from the designs of Mr. Ernest Wise, architect.

Some light was thrown upon the vexed question of cost of labourers' cottages in Ireland at a Local Government Board inquiry recently held at Navan. Mr. Anthony Scott, the architect, gave evidence as to the cost of the cottages, including all expenses it would be £201 3*s*. The Inspector, however, intimated that the Board wanted the total cost reduced to £180. Mr. Scott said it could be done, but to reduce the accommodation from four to three rooms would be a retrograde movement, to which he believed the District Council would not willingly consent.

The Glamorgan Standing Joint Committee have approved of the conveyance of the site selected in Cathays Park for the erection of county offices, and have directed that provision be made for a suitable hall for council meetings, and appointed a sub-committee to prepare a consolidated scheme. Mr. R. S. Griffiths,

architect, Tonypandy, was asked to place his services at the disposal of the sub-committee, and it was directed that in the first instance the plans should be considered on the basis of postponing the transfer of the police headquarters to the new site, but that the possibility of this transfer be borne in mind in considering the erection of the new building.

Tribunal of Appeal Case.

Means of Escape from Fire.

The Tribunal of Appeal sat at the Surveyors' Institution, Westminster, on October 11th, to hear an appeal by Mr. H. T. Tubbs, under section 22 of the London Building Acts (Amendment) Act, 1905, against the refusal of their approval by the London County Council of the means of escape in case of fire to be provided at the new building, Nos. 41 and 42, Beech Street, City. Mr. F. F. Daldy appeared for the appellant; and the County Council were represented by Mr. Godfrey. Mr. Daldy said that practically the whole point in dispute between the parties was the provision of smoke lobbies in the building. There had been two appeals before the Tribunal on the same question, and, while he admitted that in the case in dispute the premises were slightly larger, yet the contention of the appellant was that, having regard to the size of the building and what it would be used for, it was as it stood reasonably provided with means of escape. The Chairman said that he and his colleagues had, as experts, examined the building, and, subject to anything which the County Council might bring forward, there was no necessity for Mr. Daldy to labour the case. Mr. Percy B. Tubbs, F.R.I.B.A., architect, described the construction of the building, and, dealing with various alternative suggestions which had been put forward by the County Council, said that practically all of them, except that of smoke lobbies, involved a permanent connexion by means of a ladder or balconies with adjoining premises. He had endeavoured to get the consent of the adjoining owners to allow such ladders, but they refused. He had carried out experiments with smoke lobbies in a building in Long Lane, and came to the conclusion that they were no good at all. He found that the ventilators, so far from acting as exhaust ventilators, acted as inlet ventilators, and the smoke came up the staircases. Cross-examined, the witness said he had fitted up four or five smoke lobbies in buildings at the instance of the County Council, but only because his clients were not inclined to fight the Council. As the architect of the building, he believed that it was adequately protected in case of fire. Other evidence of a similar character having been called, Mr. Godfrey addressed the Tribunal. He said that the opinion of the Council was that the building in its present state did not meet with the requirements of the Act, and they considered that the alternative proposals made to the appellant were reasonable. The Tribunal allowed the appeal, and awarded the appellant 60 guineas costs.

A Tour in Normandy, 1907.

By HAROLD F. TREW (*Student*).

HAVRE was not founded till 1516, and there is little of interest to be seen here but the Church of Notre Dame, a Renaissance fabric built on a Gothic plan. The tramway to Harfleur takes one to Graville, with its church of Ste. Honorine standing high over the Seine. Here is the tomb of its patron saint, and some curiously carved Norman capitals and corbels.

Harfleur, in 1415, withstood for forty days a siege by Henry V.'s army, and was occupied by the English for twenty years. The tower, spire, and the north aisle of the church were built in the 15th century, and are of Flamboyant work, the north porch being given in Parker's "Glossary" to illustrate this style.

Passing, for the present, the spires and factory chimneys of Rouen, Petit Andely is reached, where the great Château Gaillard of Richard Cœur de Lion frowns down from the chalk hills which rise precipitously from the banks of the Seine. It was in defiance of the treaty of Louviers in 1196, that Richard built this castle against Philippe Auguste. Three months after the treaty was signed the work was begun, and it was finished within a year. The French king, seizing Evreux, declared war on Richard: "I will take Château Gaillard if it is made of iron," he said, and received the retort, "I will hold it, were it made of butter." After Richard's death, shortly afterwards, the castle was taken in 1204, but not until after a siege of seven months. In 1593 the castle was dismantled by order of Henri IV., and of the fabric itself, the best preserved part is the inner bailey, with its series of semi-circular projections, and the keep within it, whose walls are in places fifteen feet thick. Of the outer bailey, and the foreworks which protected the castle from the plateau to the east, little remains, but the deep fosses outside their walls still may be seen, and from these were taken the flints which were used in the rubble filling of the ashlar walls.

The church of St. Sauveur in the town of Petit Andely below the castle, is of simple, but pleasing design, in the Early French style; the east end consists of an apse surrounded by flying buttresses, and a lady chapel beyond it, as at Bayeux, while the interior is well proportioned.

There are some good timber houses here and at Grand Andely about a mile away, where is the well-known Hôtel du Grand Cerf, an early 16th century structure, with a fine Gothic chimney piece. Near by is the church of Notre Dame, the nave, chancel, and aisles of which are chiefly 13th century work, the south transept 15th, and the north aisle, Renaissance. The windows contain some good 16th century glass.

On the way to Evreux, on the other side of the Seine, is Louviers, with a magnificent porch considered to be one of the finest in the world. It was built, together with the south aisle, towards the close of the 15th century, when Flamboyance had reached its high-water mark. With the exception of the solidly built tower, which was erected during troublous times at the latter part of the 14th century, the rest of the church is Early French, and was begun in 1220.

Evreux, some miles to the south, stands on the site of a Roman town, and fragments of the old walls may in some places be seen. The town was destroyed by the Franks, and later, by the Norsemen. Henry I. of England burnt it, and so did Philippe Auguste. None of the 11th century work in the cathedral has escaped these fires but the four eastern bays of the nave; the remainder of the lower part dates from 1125, and the chancel from the early 14th century, with Flamboyant additions in the triforium. A fine series of wooden screens, of Flamboyant and Renaissance work, encloses the chapels between the buttresses of both nave and chancel.

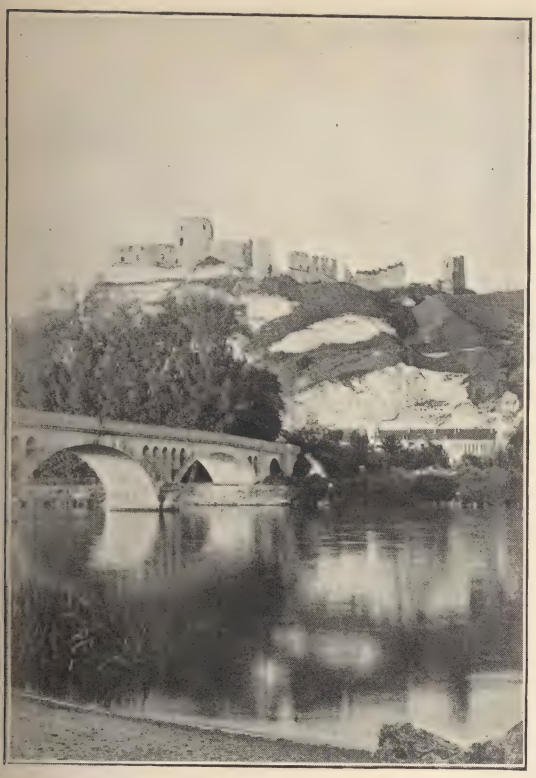
On the south side of the cathedral is the Bishop's Palace of the 15th century. The belfry, on the north side of the cathedral, dates from 1490, and has a highly ornamented flèche.

The Church of St. Taurin was built in the Romanesque and Flamboyant periods, and here may be seen the "chasse" or shrine of St. Taurin, which is silver-gilt of the 12th century, said to be the best in France.

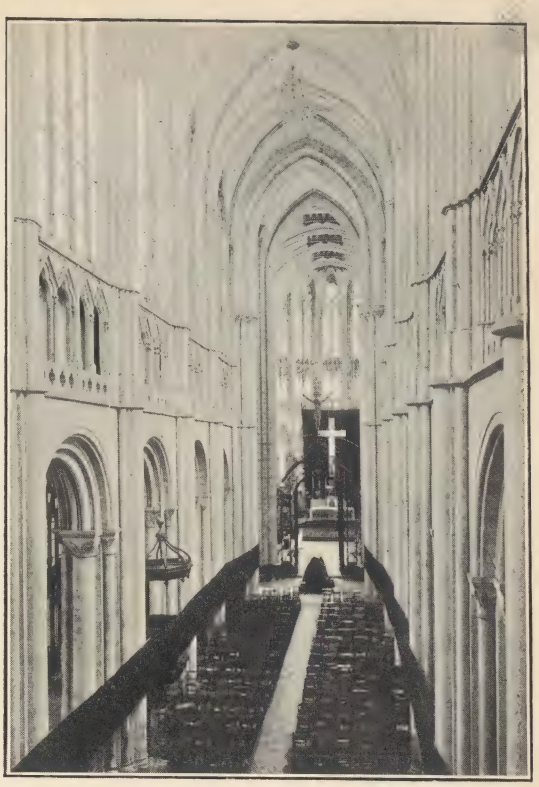
On the way to Rouen is Bec-Hellouin, whence came Lanfranc and Anselm. Of the abbey church nothing remains, for it was pulled down and the materials sold in 1809. The only Gothic work that is left is the 15th century belfry tower, and the gateway near by. The classical abbey buildings are now used as a cavalry depôt. In the village church is the tomb of Herlwin, the founder of the abbey.

At Rouen, beneath the modern church of St. Gervais, one may see the crypt of St. Mellon, the oldest ecclesiastical building north of Italy, for it was built during the 4th century. The oldest part of the cathedral is the Romanesque north tower; the nave and chancel belong to the Early French period of the 13th century; although the doors of the two transepts are of the same date, they are almost Decorated in character. The Lady Chapel is 14th century work. In 1487 the south tower, called the "Tour de Beurre" was begun, but it was not completed till 1507, shortly afterwards the magnificent west doorway was added. Richard Cœur de Lion is buried here, and in the Lady Chapel are the gorgeous Renaissance tombs of the Cardinals d'Amboise, and of Louis de Brézé.

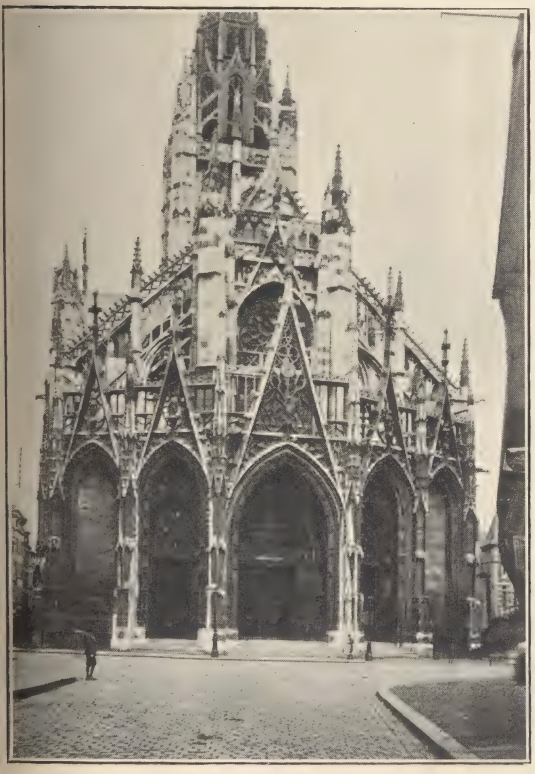
There is no want of unity in the Church of St. Ouen, although it was begun in 1318, and not finished till the 16th century. The chancel, with its chevet, and



Château Gaillard, River Seine.



Interior, Evreux Cathedral.



West Front, St. Maclou, Rouen.

Staircase, Rouen Cathedral.

A TOUR IN NORMANDY.

Photos by Harold F. Trew.

the transepts, are Decorated, and the nave Flamboyant. The central tower, with its octagonal crown, is also Flamboyant. The ugly west front was built in the 19th century to replace an unfinished front with diagonal towers.

St. Maclou, east of the cathedral is a complete example of Flamboyant work, it was begun in 1436, and was complete in 1480. The spire was not erected till 1520, and this, after its destruction by a storm, and by the Revolutionists, was replaced, in 1868, by the present one. The west front is of convex shape, there are five portals with gables, and no western towers ; the organ staircase is the gem of the interior, it was erected in 1518. The very fine Renaissance doors are attributed to the chisel of Jean Goujon, and were carved between 1527 and 1560.

Near by is the Aître St. Maclou, the cemetery of the poor at the time of the Black Death in 1348 : the timber galleries on three sides of it were built early in the 16th century, that on the north is a hundred years later.

The gateway of the Grosse Horloge dates from 1529 and is Renaissance work, the quaint little house and the fountain at its side were built in 1728. Near by is the Flamboyant Palais de Justice. The Maison Bourgtheroulde with its carvings of the Field of the Cloth of Gold must not be forgotten, nor must the donjon keep of the castle of Philippe Auguste, the Tour Jeanne d'Arc, where Jeanne was imprisoned and tried in 1431. It was in the Vieux Marché that she was burnt, and a stone inscribed with the legend " Jeanne d'Arc, 30 Mai, 1431," marks the spot where the heroine of France passed away.

Some few miles west of Rouen is St. Martin de Boscherville, and the Abbey of St. Georges is one of the most perfect specimens of Norman architecture in France, it was founded in the 11th century, and is entirely Romanesque. It may be visited by driving over the wooded hills beyond Cantelu, and its white towers may be seen as one goes down the windings of the Seine towards Havre. Further on one may catch sight of Jumièges, once the most prosperous of the monasteries of Normandy, built in the 11th century, and consecrated by William the Conqueror in 1067. The abbey suffered much from the Calvinists in the 16th century, and again at the time of the Revolution, and is now in a very ruined condition.

Caudebec stands at the northernmost point of the Seine, and the artist Vernet considered the view from its quay to be one of the finest in France : here it is that the " *mascaret* " attains, at the spring tides, a height of fifteen feet. Henri IV. said of Caudebec church that it was the prettiest chapel in his kingdom of France ; but, he added, " *le bijou est mal enchassé.*" Nevertheless, it is for the setting, and not for the gem itself that one visits Caudebec to-day, and its quaint old houses with their great eaves overhanging the narrow street or the shallow stream, are the subjects for many an artist's pencil and brush. The church, however, is

certainly not without its own interest or beauty; within, the arcade sweeps round both nave and chancel without a break, and the mouldings of its arches die into the pillar above the capital, a very unusual feature, indicating transition from the Decorated to the Flamboyant period. The windows have very good tracery, and no two of them are alike. The triple west front is rich in detail, and some of it shows the influence of the Renaissance. The central spire, 330 feet high, with its circular coronets, shows this feeling still more.

At Lillebonne, between Caudebec and Havre, is the best example in the north of Europe, of a Roman theatre. The ranges of seats have gone, but much of the walls remains. The church is of the 14th century, and has a 15th century spire, similar to that at Harfleur.

It was in the castle here that William the Conqueror held the great council which decided upon the invasion of England.

South African Branch.

Johannesburg Centre.

An Examination to qualify for Membership will be held at Johannesburg, Cape Town and Pietermaritzburg on December 18th, 19th and 20th, 1907. Application should be made to Mr. C. H. Waugh, P.O. Box 1049, Johannesburg, or Mr. R. G. Kirkby, A.R.I.B.A., P.O. Box 7 Pietermaritzburg, who will supply information regarding the examinations and also as to Membership and Studentship in the South African Branch.

Catalogues.

Messrs. Parnall and Son, Ltd., of Bristol, London and Swansea send a catalogue on quite new lines. It is a portfolio, containing coloured plates of their shop-fittings, relating particularly to jeweller's requirements, which bear evidence to the value of the experience which they are able to place at the disposal of architects and others who may require expert advice on these details.

"Boyle" is a household word in ventilation, and the little brochure recently issued by Messrs. Robert Boyle & Son, contains a number of interesting and convincing statistics and opinions relating to natural ventilation by means of the "air-pump" ventilators. One of their latest installations is applied to the Bournemouth Park Road Schools, Southend-on-Sea, under the direction of Messrs. Greenhalgh and Brockbank, architects.

St. Paul's Cathedral.

How to Arrest the Subsidence.

Simple, Effective and Economical Remedy.

SINCE the date of my previous article on this subject, the Committee appointed last December by the Dean and Chapter to examine and report upon the stability of the Cathedral have issued their report, and this has doubtless been carefully studied by all professional men who are interested in the question of the safety of our national monuments.

Throughout the report, it is evident that the points upon which the Committee have felt most anxious are those in connection with the subsoil water and the conditions affecting, or likely to affect, the level of this water.

For instance—

(*a*) They express gratification that the course of a proposed sewer has been altered, thus averting "a great danger to the Cathedral"; a danger presumably due to any lowering of the subsoil water, which might have resulted from its construction.

(*b*) The Committee refer to Sir Christopher Wren's notes as to the direction of the flow of the subsoil water.

(*c*) They express their opinion that the ground under the Cathedral has been affected by the gradual decrease in the amount of surface water percolating the soil as the lands have become covered over with well-paved roads, yards and buildings.

(*d*) They refer to various further causes which have affected the subsoil water, such as pumping operations in connection with deep basements, sewers, etc.

After describing in detail the nature and extent of the settlements which have occurred in the building, the Committee state their conclusions and make their recommendations as follows (the italics are mine):—

"After mature deliberation and a thorough examination of the Cathedral and its foundations, we are of opinion that, in spite of these settlements there is *no immediate necessity for any extensive remedial measures* to be undertaken; but this conclusion is based *on the assumption that the present conditions of the subsoil and the present water level will be maintained.* We are strongly of opinion that the sensitive condition of the structure makes it necessary that the *church should be kept under constant observation.*"

"We also recommend that the condition of *the subsoil and the state of the water level be carefully watched* and periodically recorded, as all official investigations point to the same conclusion—that *in them lie the possibility of future dangers.* In this connection attention should be given to all building operations in the neighbourhood, or *mischief of a more serious nature may arise.*"

The Committee do not advise underpinning or screening the foundations as they consider such operations would only be attended by fresh dangers, but recommend certain *repairs* to the fabric, *cleaning* the external stonework, reinstating *plastering* to the Crypt walls and the installation of a *new heating apparatus.*

I am surprised to find that the daily press and other papers have dubbed this Report a "reassuring" one, and that it is pointed to as a proof that the scare as to the condition of St. Paul's has been very much exaggerated; because, to my mind, it is in more ways than one a most unsatisfactory and alarming report.

In the first place, I think it will be conceded that the theory advanced in my previous article as to the cause of the subsidence is fully confirmed by the Committee's report. The report also tells us that if the water level is not maintained, there is danger to the Cathedral. Surely that alone is enough to alarm anyone, when we know that for years past the water level has been sinking. In spite of this, the Committee state that at present no remedial measures are necessary, and merely recommend that the Cathedral, the subsoil, and the subsoil water should be kept under constant observation, which means constant anxiety, expense, further scares and danger.

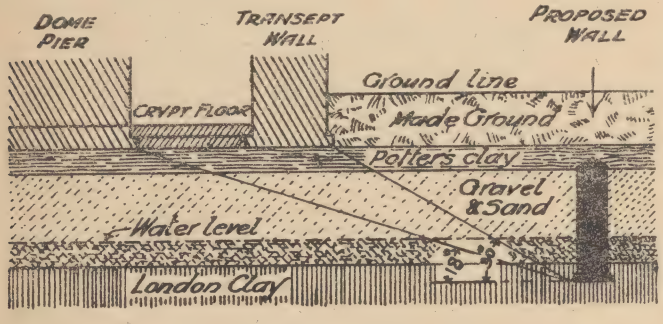


Fig. 1.

Again, the conclusion arrived at by the Committee that no immediate remedial measures are necessary is based, as the Report states, on the *assumption* that the present water level will be maintained. Seeing that the causes which have in the past affected the water level are still in operation and cannot be stopped, it follows that the water level will *not* be maintained and remedial measures should accordingly be taken at once; otherwise further settlements will occur which cannot be remedied.

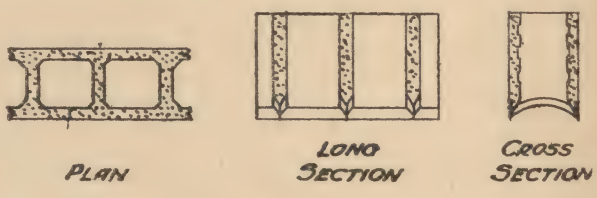


Fig. 2.

The more one reads the report and carefully considers all the circumstances, the more is one forced to the conclusion that the making good of the existing fractures in the fabric is of little importance, and, in fact that the money spent in this manner would be better saved until all movement of the fabric has been stopped; and this can only be effected by making the foundations secure and independent of all natural and artificial causes affecting them.

So long as water continues to be drawn from the strata under the Cathedral, as pointed out in my previous article, whether by artificial or natural means, it is almost bound to carry with it the finer particles of sand, with the inevitable result that the strata itself sinks. The important point, therefore, is to stop this, and having done so the Cathedral foundations will be more secure than ever they were.

I myself am confident that this object can be effected in the manner suggested in my previous article without any danger to the Cathedral; but in order to satisfy any doubts which may exist as to the safety of the building during the construction of an Enclosing Wall, I will endeavour to show that the work can be carried out in such a manner as to preclude the possibility of drawing off any water from under the Cathedral or endangering the fabric in any way.

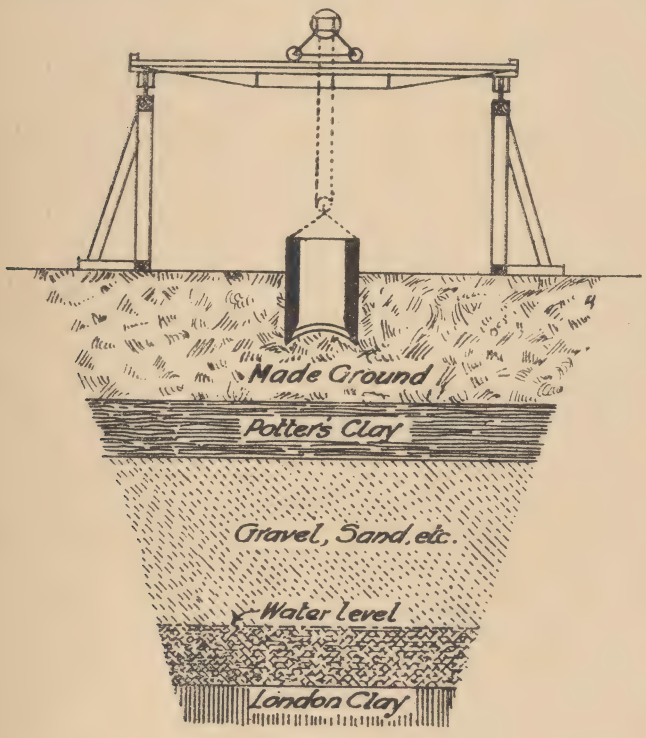


FIG. 3.

We know that the question of dealing with water in connection with foundations is generally a difficult problem; there is no royal road that can be followed, and every case must be dealt with on its merits. In the case of St. Paul's, where the lower stratum is composed chiefly of water-bearing gravel and sand, the conditions necessitate the adoption of special precautions.

The course to be pursued would naturally require special care and attention to ensure not only the commencement of the permanent work with the least possible delay, but also the carrying out of all subsequent portions in regular order, in accordance with a pre-arranged plan.

In preparing for the construction of an enclosing wall, one method would be to excavate a trench in the usual manner down to the water level. From that point there would remain an average of, say, 5 ft. of water-bearing gravel and sand

to penetrate, wherein the danger lies, to reach the London clay. This danger could be obviated by "stock ramming," which consists, briefly, of sinking tubes at close intervals into the lower strata and injecting under pressure fine Portland or Medina cement concrete or Portland cement grout along each side of the proposed lower portion of the trench; the trench could then be dug to the clay. Instead of "stock ramming," the water-bearing gravel could, within a certain distance of each side of the proposed trench, be frozen solid in sections.

Either of these methods would, if efficiently carried out, prevent the escape of any sand or water, during the construction of the wall, and afterwards, but, seeing that the work would be carried out somewhat in the dark, and that the result could not be definitely ascertained until the lower portion of the trench was being dug, I do not view these methods with favour.

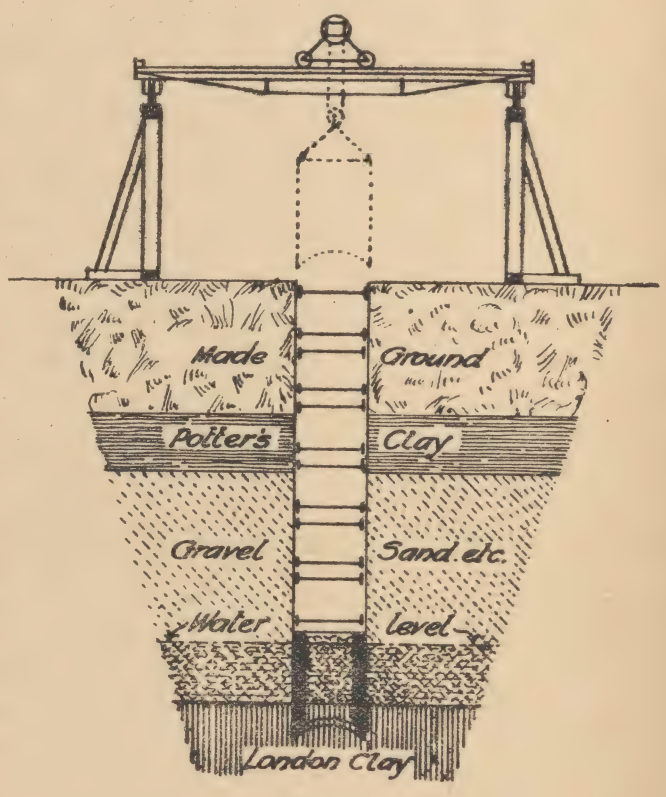


Fig. 4.

The method of construction which I should propose to adopt, combines the necessary elements of strength, endurance and stability, and is specially calculated to meet the exceptional conditions obtaining.

The proposed Wall would be constructed of concrete, the aggregate for which could be obtained from the necessary excavation. The wall itself would at its nearest point be distant about 50 ft. from the external main wall of the Cathedral, or about 90 ft. from the dome piers, giving approximately an angle of 30 degrees from the base of the new wall to the foundation of the Cathedral main wall, or 18 degrees to the foundation of the dome piers, as shown in Fig. 1.

It is not anticipated that great difficulty would be met with until the water-bearing

strata is reached, at a depth of about 30 ft. below the surface, but below this point great care would have to be exercised to prevent the escape of water and sand.

Subject to slight variations in section and details of construction, to meet any local conditions of the site, my method of construction would be as follows :—

A series of bores would be sunk around the Cathedral on the line of the proposed wall, to ascertain the nature and depths of the strata and the water levels.

Specially-designed reinforced concrete boxes or caissons provided at the bottom with a metal shoe with cutting edge would be cast in movable moulds (Fig. 2).

These concrete boxes, which would form part of the permanent work, would be weighted, and sunk by excavating the material from within. (Fig. 3).

On reaching the water level the excavation of material from within the boxes would cease until they had been sunk into the London clay to the requisite depth and the joints between the boxes had been made watertight. (Fig. 4).

Previous to sinking the boxes through their last stage, iron tubes with perforated ends, and corresponding with grooves in the ends of the boxes would be driven to keep the grooves clear of material and also to act as guides.

When the boxes are sunk to their final position the grooves would be effectually closed and made watertight by slowly withdrawing the iron tube, and forcing in Portland cement grout under pressure, the result being a thoroughly watertight joint. (Fig. 5).

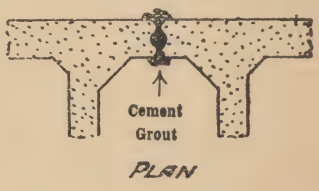


FIG. 5.

FIG. 6.

The material and water *within the boxes and below the water line* could then be removed without risk of drawing away any water or material whatever from the subsoil under the Cathedral or the surrounding buildings.

The metal cutting edge would then be removed from the box divisions and the filling in with mass concrete proceeded with ; the result being a solid concrete wall. (Fig. 6).

If the work, which, of course, would require most careful supervision, were carried out somewhat as outlined above, there would be no danger to the Cathedral or other buildings, and so far as the Cathedral is concerned, there would be an end to any further movement of the fabric due to the lowering of the subsoil water.

12*th Oct.*, 1907. T. STEWART INGLIS, M.S.A., Q.S.A.

Ordinary Meeting.

The First Ordinary Meeting of The Society of Architects, for the Session, 1907-8, will be held at Staple Inn Buildings (South), Holborn, W.C., on Thursday, November 14th, 1907, at 8 p.m.

Agenda :—

1. The President to take the chair.
2. Minutes of the last Ordinary Meeting.
3. Nominations for Membership.
4. Ballot for the following Candidates.

For Membership :—

Algar. Albert Edmund,	Shanghai, China.
Broadbent. William,	Redhall Chambers, Guildford Street, Leeds.
Chambers. Walter Ashbridge,	Palli Hill, Branda, Bombay.
Chevalier. Hammond Chittenden,	R.I.E. College, Cooper's Hill.
Curram. Edgar Septimus,	137, Rosendale Road, West Dulwich, S.E.
Davidson. Thomas Gerrard,	44, Great Russell Street, W.C.
Foster. William Frederick,	24, Heslop Road, Balham, S.W.
Glendinning. James John,	15, Commercial Street, Halifax.
Howden. Robert, a.r.v.i.a.,	Johannesburg, South Africa.
Jolly. Pearson Alexander Adam,	Apethorpe, Wansford, Northamptonshire.
Katrak. Navroji Hormasji, a.m.inst.c.e.,	Town Hall, Bombay, India.
Kendall. Herbert,	1, Salterns Villas, Parkstone, Dorset.
Lawson. Vincent Alexander,	17, Rowcroft, Stroud, Gloucestershire.
Moffatt. Walker Goldstraw, a.r.i.b.a.,	Johannesburg, South Africa.
Morgan. William Vincent, a.r.i.b.a.,	24, King Street, Carmarthen.
Oldfield. Henry,	Workington.
Oliver. Henry,	4, Whitehall Court, S.W.
Somake. Moses J. H.,	Karachi, Sind, India.
Williams. Arthur Stanley,	Llandilo.

For Studentship :—

Kelly. Harry,	Glenavon Newport Road, Barnstaple.
Jones. David John,	62, High Street, Llanelly.
Deakin. Geoffrey Ward,	10, Berwick Road, Shrewsbury.
Evans. Benjamin Edward,	Ivy Bank, Brighton Road, Horley.
Field. Fred,	Annandale, Winnington, Northwich.
Haworth. Philip,	Dacca House, Chorley, Lancashire.
Maddox. Frank Morrall,	4, Dogpole, Shrewsbury.
Newey. Ernest John,	251, Staveley Road, Wolverhampton.
Palmer. Albert Edward,	Melton Street, Melton Constable.
Palmer. Frederick Charles,	28, Sheen Lane, Mortlake, S.W.
Roberts. Douglas Henry,	Clent House, St. John's, Worcester.
Voce. Thomas John Norman Garnett,	28, Wolverhampton Street, Dudley.
Weeks. Herbert John,	4, Western Crescent, Wamer St., Paignton.
Whittaker. Fred,	5, Foster Street, Appleton, Widnes.
Williamson. Alfred,	75, Church Road, Northwich.

5. Auditors' Report and Balance Sheet.
6. Travelling Studentship. Presentation of Silver Medal.
7. Presidential Address.

THE
Journal
OF
The Society of Architects
FOUNDED 1884. INCORPORATED 1893.

Including Transactions and Architectural Notes.

No. 2. Vol. I.] **DECEMBER, 1907.** **[New Series.**

The Society is not, as a body, responsible for the opinions expressed by individual authors and speakers.

The Safety of St. Paul's Cathedral.

THE recent paper read before the R.I.B.A., by the Surveyor to the fabric of St. Paul's, Mr. Mervyn Macartney, has served to draw public attention to the matter through the columns of the daily papers. *The Globe* in a leading article on November 19th, says that to the uninstructed mind the signs of settlement and of movement in the dome, the south transept, and the western towers and portico, seem to corroborate the alarmist rumours as to the instability of the building which were in circulation a short time ago. In spite of the care, we are told, with which Wren spread the weight of the dome, the centre of the great mass had sunk, and was now severed from the surrounding masses. The walls of the southern façade had moved outwards, and had sunk slightly to the east and west. The two towers were out of the perpendicular, the one to the north and the other to the south, and the portico had followed the direction of the towers, and in addition had moved westward.

Increasing Vigilance Necessary.

Those, however, who have any practical experience of our ancient national monuments know that these settlements and derangements are to a great extent, like Mr. Pecksniff's celebrated indisposition, "chronic." That "the arch never rests" is a maxim which is, or should be, graven on the memories of Deans and Chapters, and unceasing vigilance alone can ensure the stability of our cathedrals and abbey churches. When that vigilance is relaxed catastrophe is sure to follow, as it overtook Hereford in 1788, and Chichester in 1864. At the present moment two of the grandest examples of Norman architecture in Christendom, Canterbury and Winchester Cathedrals, are in splints, and Exeter, we believe, is about to undergo the same process. And the unpleasant discovery is made from time to time that

scamped work as much as time and weather is responsible for much of the mischief. Seven centuries have not materially changed the British workman.

But St. Paul's has enemies to contend with from which the cathedral churches in the provinces are free. To a large extent the great cathedrals of England are placed in sleepy hollows, in homes of ancient peace, where the rumble of heavy traffic is unknown, and the poisonous exhalations of the factory chimney and the furnace are unknown. They stand surrounded by trim closes or guarded precincts, and even in busy towns like Worcester and Chester all about them seems to breathe the air of fugitive and cloistered virtue. Very different is it with St. Paul's, set down in the very midst of busy London's busy roar.

The Source of Danger.

St. Paul's churchyard, from which the peaceful appurtenances of Doctors' Commons have ruthlessly been swept away, is for sheer noise and bustle excelled by few spots in London. Every fume that blackens and corrodes is free to work its will upon tower and wall and dome. But the gravest peril arises, not from faulty construction, not from the atmosphere, but from the earth beneath and the subsoil beneath the earth. This was the one thing that Wren did not and could not be expected to provide against. He could not forsee the labyrinth of tubes and pipes and railways which honeycomb the City of London, nor the constant diggings and trenchings which threaten the very foundations of the Cathedral. All the requirements of modern civilisation—water supply, drainage, light, locomotion—have in their turn threatened the masterpiece of the great architect. The resources of modern building science have restored the western portico to its original state, and have made the western towers for the moment secure. But the concluding words of Mr. Macartney's paper sound a warning note : " Interference with the subsoil was clearly not contemplated by Wren, and without it they might even now reduce the Cathedral's danger to a minimum."

An Appeal to "the Man in the Street."

Put in slightly different terms, this is a confession by a most competent authority, who himself is responsible for the fabric of the cathedral, that that building is in danger and that any further tampering with the subsoil may render that danger acute. With the ground left in its present state he is prepared to guarantee the stability of the western towers and of the portico which depends on them, but by this condition they stand or fall. And the warning is the more impressive that it is delivered with complete absence of sensationalism. It is something to feel assured that the guardians of what is in some respects the grandest of our national possessions, of a building which year by year is becoming more and more associated with the life of the metropolis, of the kingdom and of the Empire, are fully alive to the realities of the situation. Forewarned is forearmed,

and they are on the *qui vive* for any utilitarian scheme or act of vandalism which may impair the safety of their sacred charge. But it is necessary that they should have at their backs a mass of well-informed public opinion, and that not only the learned societies but the man in the street should be up in arms to resist any proposal and any commercial undertaking which should threaten, however remotely, to bring ruin and destruction to "the dome with the golden cross." The Press have played an active and a useful part in resisting the latest enterprise of modern ingenuity which it was proposed to exercise at the expense of the Cathedral, and the wider the publicity that is given to Mr. Mervyn Macartney's paper the better.

The Journal.

The form which the Society's official journal now takes, appears to meet with the general approval of the members, judging from communications received. Among them is one from our old friend Mr. Harry Hems, who says :—

"My warmest congratulations upon November's most admirable issue of *The Journal;* it holds its own against any other monthly I know. Printing matter and illustrations are alike excellent. Go to and prosper!"

We are desirous of making *The Journal,* not only a record of the Society's doings, but a medium of useful information, so far as our limited space permits, and to this end we shall welcome suggestions and criticisms.

Annual Dinner and Summer Excursion.

The Twenty-Fourth Annual Dinner of the Society will be held on May 15th, 1908, in London, and on June 12th the Society will pay a visit to Mansfield, to extend over the week end. The arrangements for the visit are in the hands of the President, Mr. R. Frank Vallance, F.R.I.B.A., and in the meantime members are invited to make a note of both these dates.

It is hoped that this long notice will enable members to make early arrangements for attending these functions and so keep these dates clear of other engagements.

Visits to Works.

Preliminary arrangements have been made for the Society to visit the cement works of the Associated Portland Cement Manufacturers (1900) Registered, in the Spring of 1908.

Mr. Robert Frank Vallance.

The newly elected President of The Society of Architects is a son of the late George Vallance of Cavendish House, Mansfield. He received his education at the grammar school in that town, and after first securing an insight into the practical side of the profession, was articled to Messrs. Bakewell and Bromley, architects, of Nottingham, subsequently leaving to take up a position as assistant in the office of Messrs. Goddard & Sons, architects, of Lincoln.

At the age of twenty-four, Mr. Vallance commenced practice as an architect in his native town, and during the last twenty-seven years has built up an extensive practice of a very varied character, embracing asylum, hospitals, workhouses, banks, hotels, Board schools, warehouses, factories, public baths, electric power stations, business premises and private residences. His services are also in much request in connection with arbitrations, valuations, water supply and sewage disposal, and parliamentary work.

In 1898 he was joined in partnership by Mr. L. A. Westwick, F.R.I.B.A., who had been associated with him practically from the first.

Mr. Vallance is a Fellow of the R.I.B.A. and the Surveyors' Institution, a Member of The Society of Architects, the Royal Institute of Public Health, and the Association of Municipal and County Engineers, and among the public appointments which he holds are those of Borough Surveyor of Mansfield and Surveyor to the Urban District Council of Warsop.

Outside his profession Mr. Vallance has many interests and is chairman of several public companies, and life governor and honorary architect of the Mansfield and Mansfield Woodhouse Hospitals. He is an active Freemason, being a P.P.G.S.D. of Notts, and one of the Founders of The Society of Architects Lodge.

During the seventeen years Mr. Vallance has been a member of the Society he has taken a prominent part in its work as a member of its Council, and has served the office of Vice-President for two years. These services have been recognised by his recent unanimous election to the highest position in the Society, which, under his guidance, may look forward to a further period of prosperity.

International Congress of Architects, Vienna, 1908.

The Eighth International Congress of Architects will be held in Vienna from May 18th to 23rd, 1908. Some of the subjects to be considered relate to Copyright in Design, Competitions, The Legal Qualification of an Architect, Reinforced Concrete Construction, The Public Administration of the Fine Arts, Preservation of Public Architectural Monuments.

Mr. R. FRANK VALLANCE, F.R.I.B.A., F.S.I.,
President of The Society of Architects, 1907 - 8.

Proceedings.

THE First Ordinary Meeting of The Society of Architects for the Session 1907-8 was held at Staple Inn Buildings, Holborn, W.C., on Thursday, November 14th, 1907, at 8 p.m.

THE PRESIDENT (Mr. R. F. Vallance, F.R.I.B.A.) having taken the chair, the Minutes of the previous meeting were read, confirmed and signed.

The following nominations were then announced :—

For Membership :—

ANTCLIFFE. WILLIAM CHARLES	5, Clonmel Road, Fulham, S.W.
BYRON. HUGH	79, Bûshwood, Leytonstone, N.E.
DUNCH. CHARLES	St. Clement's House, St. Clement's Lane, E.C.
LANG. ALBERT LANCELOT	3, Avenue Road, Springrove, Isleworth, W.
PULFORD. WILLIAM JAMES	5, Queen Street, Maldon, Essex.
SMITH. ALFRED EMMANUEL	152, Larkhall Lane, Clapham, S.W.
SMITHSON. ALFRED HUGH	17, Regent Street, Cheltenham.
WOODBRIDGE. STEPHEN	210, High Street, Brentford.

For Studentship :—

WILLIAMS. JOHN CLIFORD	Glengarry, Kirketon Avenue, Weymouth.

The ballot was then taken and the following candidates were declared to be duly elected :—

As Members :—

ALGAR. ALBERT EDMUND,	Shanghai, China.
BROADBENT. WILLIAM,	Redhall Chambers, Guildford Street, Leeds.
CHAMBERS. WALTER ASHBRIDGE,	Palli Hill, Branda, Bombay.
CHEVALIER. HAMMOND CHITTENDEN,	R.I.E. College, Cooper's Hill, Surrey.
CURRAM. EDGAR SEPTIMUS,	137, Rosendale Road, West Dulwich, S.E.
DAVIDSON. THOMAS GERRARD,	44, Great Russell Street, W.C.
FOSTER. WILLIAM FREDERICK,	24, Heslop Road, Balham, S.W.
GLENDINNING. JAMES JOHN,	15, Commercial Street, Halifax.
HOWDEN. ROBERT, A.R.V.I.A.,	Johannesburg, South Africa.
JOLLY. PEARSON ALEXANDER ADAM,	Apethorpe, Wansford, Northamptonshire.
KATRAK. NAVROJI HORMASJI, A.M.INST.C.E.,	Town Hall, Bombay, India.
KENDALL. HERBERT,	1, Salterns Villas, Parkstone, Dorset.
MOFFATT. WALKER GOLDSTRAW,	P.O. Box 967, Alexandria, Egypt.
MORGAN. WILLIAM VINCENT, A.R.I.B.A.,	24, King Street, Carmarthen.
OLDFIELD, HENRY,	Workington.
OLIVER. HENRY,	4, Whitehall Court, S.W.
SOMAKE, MOSES J. H.,	Karachi, Sind, India.

As Students :—

DEAKIN. GEOFFREY WARD,	10, Berwick Road, Shrewsbury.
EVANS. BENJAMIN EDWARD,	Ivy Bank, Brighton Road, Horley.
FIELD. FRED,	Annandale, Winnington, Northwich.
HAWORTH. PHILIP,	Dacca House, Chorley, Lancashire.
JONES. DAVID JOHN,	62, High Street, Llanelly.
KELLY. HARRY,	Glenavon, Newport Road, Barnstaple.
MADDOX. FRANK MORRALL,	4, Dogpole, Shrewsbury.
NEWEY. ERNEST JOHN,	251, Staveley Road, Wolverhampton.
PALMER. ALBERT EDWARD,	Melton Street, Melton Constable.

Palmer. Frederick Charles,	28, Sheen Lane, Mortlake, S.W.
Roberts. Douglas Henry,	Clent House, St. John's, Worcester.
Voce. Thomas John Norman Garnett,	52, Halesowen Road, Netherton, Worc.
Weeks. Herbert John,	4, Weston Terrace, Winner St., Paignton.
Whittaker. Fred,	5, Foster Street, Appleton, Widnes.
Williamson. Alfred,	75, Church Road, Northwich.

Mr. E. J. Sadgrove, f.r.i.b.a., in presenting the Auditors' Report and Balance Sheet, said that in considering the accounts of the past year's working, it would be obviously unfair to institute comparisons, as the result must depend upon the calls made upon the Society's resources on the one hand, and its growth on the other, in any one year.

The past year had been one of progress and development as shown by the fact that the income had increased by some £232, and the outgoings by £144, over the previous year.

Unfortunately, owing to circumstances outside the control of the Council, viz., depreciation of securities, they had had to debit the Revenue Account with a sum of nearly £70, which consequently turned the balance of income over expenditure of £19 8*s.* 7*d.* into a deficit of £50 5*s.* 5*d.*

The income from subscriptions alone was close on £1,600 per annum, an increase of £70, and the revenue from advertisements in the Society's publications had, under the new management, gone up by £60 in the last six months. Donations to the library also showed a satisfactory increase, and there was also an increase in the dinner receipts.

The three excursions brought in £100 12*s.* 0*d.*, and the examination fees had decreased. The general expenses had gone up some £60, accounted for principally by commission on advertisement orders, the benefit of which outlay they would find during the coming year.

The three excursions together cost the Society a total of about £22, as the members were only charged the railway fares and travelling expenses, there being no margin for printing expenses and organisation.

Following the Council's instructions, they had been liberal in the matter of provision for bad debts and depreciation.

The contribution to the South African Branch was a new item, and the amount for the scholarship had automatically risen and would do so again next year.

Turning to the Balance Sheet, the assets of furniture and library had increased in value a little, sundry debtors were more and the investments had depreciated as before mentioned by just £70, but these, they hoped, would recover.

The cash available had risen and the temporary overdraft has since been automatically repaid.

The total surplus was necessarily encroached upon, but taking into consideration the exceedingly bad year which has affected everyone, the result was not

Revenue Account and Balance Sheet.

For the Year ending 31st October, 1907.

REVENUE ACCOUNT.

	£ s. d.	£ s. d.		£ s. d.	£ s. d.
To Expenses		1078 15 11	By Subscriptions		1487 6 6
General Expenses	139 5 0		Members	1298 17 0	
Legal Expenses	12 14 0		New Members	107 2 0	
Postages	95 9 11		Students	81 7 6	
Printing and Stationery ..	152 1 9				
Rent	225 0 0		„ Entrance Fees		106 1 0
Salaries	413 11 0		„ Examination Fees		37 18 4
Commission	40 14 3		„ Annual Dinner (Sale of Tickets) ..		54 3 0
„ Gratuity to Secretary		25 0 0	„ Excursions (Sale of Tickets) ..		100 12 0
„ Bad Debts		82 11 4	Bath	69 5 0	
„ Depreciation on Furniture ..		11 18 9	Winchester	21 9 0	
„ Annual Dinner Expenses ..		116 4 7	Letchworth	9 18 0	
„ Examination Expenses		41 11 4			
„ Travelling Studentship		25 0 0	„ Interest on Investments		25 8 0
„ "Architects' Magazine"		446 2 11	„ Interest on Deposit		4 17 8
„ "Year Book Printing, &c." ..		63 14 2	„ "Architects' Magazine"—		
„ Cost of Visits—			Advertisements and Sales		207 2 7
Bath..	83 8 10		„ Year Book—		
Winchester	29 16 8		Advertisements and Sales		50 15 0
Letchworth	10 2 6		„ Donation to Library		10 19 6
		123 8 0	„ Hire of Reading Room		2 12 6
„ Donation to Architects' Benevolent Fund		5 5 0	„ Deficit for Year		50 5 5
„ Amount Written off Library ..		8 15 6			
„ Architectural Scholarship ..		20 0 0			
„ South African Branch		20 0 0			
„ Amount Written off Securities		69 14 0			
		£2138 1 6			£2138 1 6

BALANCE SHEET.

	£ s. d.	£ s. d.		£ s. d.	£ s. d.
To Sundry Creditors		207 11 2	By Furniture		75 8 8
Subscriptions paid in advance	48 16 6		Balance from last account	67 4 11	
Sundry	158 14 8		Additions during the Year	20 2 6	
				87 7 5	
To Surplus		1164 9 1	*Less* Depreciation	11 18 9	
Balance as at 31st Oct., 1906	1214 14 6		„ Library		74 1 6
Less Deficit from Revenue Account	50 5 5		Balance from last Account	75 7 10	
			Additions during the Year	7 9 2	
				82 17 0	
			Less Depreciation	8 15 6	
			„ Sundry Debtors		348 9 0
			Members	237 6 0	
			Students	14 14 0	
			Advertisers	105 1 4	
			Sundry	35 2 0	
			Suspense Account	50 0 0	
				442 3 4	
			Less Reserve for Bad Debts	93 14 4	
			„ Investments		842 8 10
			„ £568 18 8 Metropolitan Consolidated 2½% Stock @ 76	432 8 10	
			„ £500 0 0 Consols @ 82	410 0 0	
			„ Cash		31 12 3
			Union of London and Smiths Bank Deposit Account ..	178 19 11	
			Petty Cash	7 3 9	
				186 3 8	
			Union of London and Smiths Bank. Current Account	154 11 5	
		£1372 0 3			£1372 0 3

In accordance with the provisions of the Companies' Act, 1900, we certify that all our requirements as Auditors have been complied with; and we report that we have audited the above Balance Sheet with the books and vouchers relating thereto, and that in our opinion it is properly drawn up so as to exhibit a true and correct view of the state of the Society's affairs as shown by the books of the Society.

140, Leadenhall Street, E.C.
London, *November 11th*, 1907.

EDWIN J. SADGROVE, *Hon. Auditor.*
BOLTON, PITT & BREDEN, *Auditors.*

unsatisfactory, and the accounts showed that the finances of the Society have been administered with due regard to the interests of the members, and the wider interests of the work of the Society in the direction of Registration and other matters.

They had carried to a suspense account a sum of £50 due under a former advertisement contract, as the negotiations in this matter were still going on, owing to circumstances with which the Council was acquainted.

The books and accounts had been well and correctly kept, as shown by the fact that no question had to be raised which affected their accuracy.

Mr. David Morgan, f.r.i.b.a. (Cardiff), moved the adoption of the Report and Balance Sheet.

Mr. C. H. Mead seconded the proposition which on being put to the Meeting was carried unanimously.

The Secretary intimated that Mr. J. Drummond Murdoch (Edinburgh), the winner of the 1907 Travelling Studentship, was prevented from attending the meeting, and asked that the Medal and the Balance of the Award might be forwarded to him.

Mr. R. Frank Vallance, f.r.i.b.a. then read his inaugural address, and at its conclusion Mr. G. E. Bond (Rochester), Vice-President, in proposing a very hearty vote of thanks to him for the same, said the President had raised a number of points of interest, but none, he thought, to which exception could possibly be taken or which they could in any way criticise. By his long acquaintance with Mr. Vallance, he could testify to his ability to fill the high office of President, and was sure that under his guidance the prestige of the Society would not only be maintained but improved. If Registration should be accomplished during the term of office of Mr. Vallance, none would, he felt sure, be better pleased than their President.

Mr. C. H. Mead (London) in seconding the vote of thanks referred to the Students' Correspondence Classes in which he was one of the Examiners, and to the fact that although, so far, only four papers had been worked, a general improvement was already noticeable. With regard to the sketching trips upon which Mr. Vallance had touched in his address, Mr. Mead thought that although they might be successful in and around London, the greatest difficulty would be found in centralising their more numerous provincial Students. Mr. Mead also emphasised the necessity for supporting the Architects' Benevolent Society, suggesting several ways for making its claims more widely known.

Mr. G. E. Bond then formally put the motion to the Meeting, and it was carried unanimously.

Mr. R. F. Vallance briefly returned his hearty thanks for the reception accorded him, and the proceedings terminated.

President's Address.

Mr. R. FRANK VALLANCE, F.R.I.B.A.

IN the first place allow me to thank you for the honour which you have conferred upon me in electing me your President for the ensuing year. I am fully convinced that I shall receive that support and assistance from the Past President, Vice-Presidents and Members of Council, which will enable me to discharge the duties attaching to the position to which I have been elected. Thus assured, I take the chair with the confidence that the good work done in the past in the interests of Architects and Architecture will be continued, and I can only say that it will be my endeavour to uphold the dignity attaching to the Presidential chair.

Growth of the Society.

From a perusal of the twenty-third annual report recently issued, one cannot help noticing the satisfactory increase in the membership which now stands at 844, and although it is still possible to gain the privileges of membership without having passed a qualifying examination, the Council uses every means possible to ensure that none but thoroughly competent men of sound integrity shall be enrolled as members. There are, however, many well qualified architects who at present belong to no Institution or Society, whom we should be glad to welcome as members of The Society of Architects, and I would invoke the assistance of members to make known to such architects what our Society stands for, to point out what we have done in the past, especially towards the attainment of that great object Registration, and explain the great impetus they give to that movement by enrolling themselves as members of our Society.

It will however be my endeavour to see that the high standard of proficiency now required from candidates is in no way reduced, and I look forward to the time when the only means of accession to our ranks will be by examination.

A very gratifying feature is the interest which members who have gone to reside abroad are taking in our doings. We have already a branch in Johannesburg and negotiations are taking place for the formation of a branch in Bombay.

Education.

The necessity for better means for the special education and training necessary for an architect, especially in our smaller provincial towns, is very urgent. In this direction a step forward has been made in the formation of the Students' Section in connection with our Society, and we are deeply indebted to Mr. C. H. Mead, the Chairman of that Committee, for the interest he takes in the work. I sincerely trust that the Students will duly appreciate the efforts which are being made on their behalf, and show it, taking advantage of the classes formed for their instruction. The Students will find the information to be gained in these classes will be of great

assistance to them in preparing for the Society's qualifying examination and for their future work.

I should like to suggest that one or two half-day sketching trips should if possible be arranged during the Session. This would be found not only a very pleasant way to spend Saturday afternoon, but should prove beneficial in many ways, and as our knowledge should be based upon experience of those who have gone before, as much time as possible should be devoted to making carefully measured drawings of buildings of recognised beauty, and of the careful study of their construction, for we should remember that the proportions which resulted in such noble and dignified effects in the past ages, still hold good to-day, and that without good construction we cannot have good architecture.

Finance.

I think I may be pardoned for drawing attention to the improved financial position of the Society. Ten years ago we had a small income and a considerable deficit. Now the position is reversed and while we are a little on the wrong side this year, we have reduced our liabilities without impairing our powers of development. It is the general depreciation of securities which affects us all which is the responsible factor. We have a useful reserve fund and an increasing income, which admits of our continually extending the sphere of utility of the Society. This desirable result has not been brought about by any niggardly policy of your Council, as it has from time to time voted considerable sums from the general fund for objects allied to the profession which it considered worthy of support. Notwithstanding the various grants made, the financial position of the Society has improved and is an indication of its growth and stability upon which I think we may congratulate ourselves.

Library.

It is gratifying to see the increasing use made of the Library, and I should like to emphasise the note in the Council's report, asking for the co-operation of every member in extending this very desirable adjunct to the Society's usefulness.

Social.

The social functions which were so successful last Session, may, in my opinion, be the means of much good to the Society and to its members individually by cementing friendship, and affording the means for an interchange of opinions on matters which crop up in our practice. I therefore hope to see these continued in my year of office, and shall look for the cordial support of the Council and members generally in this direction.

Registration.

It is now twenty-one years since the idea of obtaining an Act of Parliament to make it compulsory that all persons entering the profession should be duly qualified by examination took root, and while we have *not* I regret to say yet attained the

desired end, I wish it to be most distinctly understood that progress has been made and that your Council does not intend to relax its efforts in the slightest degree.

The suggestion of the R.I.B.A. to alter its charter and bye-laws does not go far enough. What we want is that it shall be illegal in the future for a person to enter the profession and practice as an Architect unless he has been duly trained and passed a qualifying examination. We have got beyond the argumentative stage and it is now generally admitted that registration or federation is right in principle and the only point at issue is how best to carry that principle into effect.

So long as any section of the profession stand aloof or is antagonistic on points of detail to a measure which it approves in principle, progress is retarded, whereas could we go to Parliament with a non-contentious measure and a united front it is only reasonable to suppose that facilities would readily be made for the passing of an Act.

It is at least gratifying to find that individual members of Parliament and the public generally now view the Bill with more favour, and since the best asset a nation has, is a healthy population, it is inevitable that our Legislators must sooner or later come to the conclusion that it is absolutely necessary for the public good that none but thoroughly trained men should design and supervise the erection of the dwellings in which our population live and the places in which they are employed, and to this end place the Architects' Registration Bill on the Statute Book.

When this is accomplished and Architects are all trained men, we shall receive the confidence of the public and of the Medical Profession, and take our proper place in being called upon to assist that profession to raise the general health of the people and so help in arresting the deterioration of the race about which so much has been heard in recent years.

Planning of Suburbs or Town Planning.

The manner in which new Suburbs are formed on the borders of our Towns, without the slightest regard to any general scheme of development, has attracted a good deal of attention during the last year or two. It is quite a common occurrence for a valuable residential district to be spoilt, say, by the advent of a colliery and the accompanying tenements which inevitably follow. So long as these tenements are erected to comply with the bye-laws as to thickness of walls, strength of timbers and minimum air space in the rear, there is no law to prevent the crowding of, say, 40 houses to the acre, without forecourts, or any sign by which one house can be distinguished from another in, say, a row of 100 houses, except by the number on the door. This, I contend, ought not to be possible in the 20th century, and I am glad to see that Mr. Burns proposes to bring in a measure or measures dealing with Town planning and Housing Reforms during the coming Session.

Let us give every credit to the promoters of the first Garden City at Letchworth ; we may hold different opinions as to the various buildings which have been erected

there, but limiting the number of houses to be erected to the acre to 12, the general planning of streets and open spaces, and the disposition of various classes of buildings on the area, I think we shall all admit are in the right lines.

There can be no doubt that environment plays a very important part in the development of all forms of life, and the mere fact that such a large proportion of the population in our Towns lives in such squalid houses in narrow streets has some bearing on the drunkenness and depravity often found amongst the unfortunate people enforced to spend their lives in such horrid places.

I think this matter of Town Planning well worthy of the earnest attention of our Council.

Strand Improvement.

I am sorry to see that the L.C.C. still refuse to alter their decision as to the line of building frontage between the two churches of St. Mary Le Strand and St. Clement Danes. Your Council carefully considered this question in 1906, and were of opinion that the plan suggested by the Further Strand Improvement Committee was far preferable to the L.C.C. proposal, and consequently joined in the memorial asking for the matter to be re-considered.

As a provincial Architect there has been no question of public improvement in the Metropolis which has appealed to me so strongly as this. The opportunity for giving London one of the finest avenues to be seen in any City of Europe and of opening up from the West, the view of the Law Courts and from the East, that of the Church of St. Mary Le Strand, appears likely to be lost for ever. No matter what the extra cost would be, now that the site is cleared, I consider it nothing short of a national calamity that this opportunity for effecting such a noble and dignified improvement as that suggested by the Further Strand Improvement Committee, should be lost.

Competitions.

The result of the preliminary competitions for the New London County Hall has been made known and the authors of fifteen designs selected to compete together with eight Architects appointed by the County Council in the final competition. I am sorry not to find the name of a member of our Society amongst the fifteen successful competitiors, but it is at least gratifying to see the names of several young and comparatively speaking unknown men amongst the fortunate, and further to know that the London County Hall will be erected from the designs of an Englishman, as no foreigner has been successful in the preliminary competition.

Crosby Hall.

I sincerely trust means may be found to preserve this Historic Building to the nation. If our Ancient City Guild seriously take the matter in hand, there is little doubt the necessary funds will be forthcoming, and this fine building which connects us as it were with the time before the Great Fire will not be demolished. I take the

liberty of quoting from a speech of Mr. W. D. Caröe, F.R.I.B.A., delivered at a meeting held at the Mansion House, when this matter was under consideration, when Mr. Caröe is reported to have said that :—

"We have before us a piece of design and workmanship executed at a period when architecture was the first of the Arts, and when the individual craftsmen were artists in the highest sense of the term—artists literally to their fingers' ends. It has a value of its own second to no other building in the city. As a piece of design, it may be held up for all time as a classic example of architectural skill and conception. To the architectural scholar, it is a Gainsborough or a Reynolds in architecture."

Architects' Benevolent Society.

I should like to take the opportunity of reminding our members that there is in existence an Architects' Benevolent Society, which has for its object the relief and assistance of our confréres who have fallen on evil times. Is it too much to ask that all members of our Society whose circumstances in life will fairly warrant it (and I sincerely hope there are many such) will make a small annual subscription to this very deserving fund. Those members who do not care to send individual subscriptions to the Benevolent Society, might, I venture to suggest, subscribe to a general fund to be transmitted through our Secretary, who I am sure, would only be too pleased to forward collectively any amount he might receive as coming from members of our Society. Gentlemen, I commend this worthy object to your serious consideration.

The Society of Architects Lodge, No. 3244.

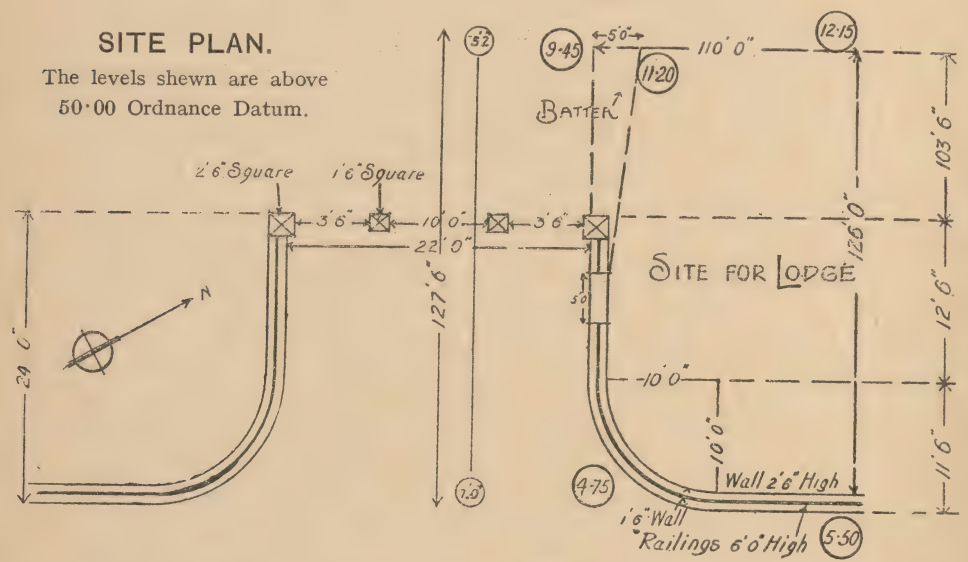
This new professional Lodge, which was consecrated by the Grand Secretary on October 16th, held its first regular meeting at the Great Eastern Hotel on November 13th. The Worshipful Master, Mr. Albert E. Pridmore, took the chair, and was supported by his wardens Mr. C. McArthur Butler and Mr. J. Bartlett ; Mr. Cholton James, D.C. ; Mr. E. J. Partridge, Secretary ; and other officers. There were six candidates for initiation and four as joining members. The maximum number allowed by the Book of Constitutions, five, was duly initiated by the Worshipful Master in a very impressive manner, and afterwards Mr. Cholton James addressed the initiates. The several officers well sustained the high example set them by the Worshipful Master, and the earnest manner in which all the duties were carried out augurs well for the success of the Lodge. Mr. Lockton, of Newark, one of the joining members, was appointed organist. The brethren spent a pleasant evening together at the close of the business.

Students' Design Competition.

The following Competition is open to Students of the Society, and the winner will receive a prize of the value of £3 3s., presented by Mr. E. M. Leest, J.P. (Past Member of Council). The decision of the Council will be final on any matter arising out of the Competition.

Subject.

An Entrance Lodge to a Public Park, to be erected on a site of which particulars are given herewith, at a cost not exceeding £1000.



The accommodation must include a Public Waiting Room, Caretaker's Living Room, and three Bedrooms, Bath, W.C., and other necessary offices.

The style and materials are left to the Competitors.

Drawings Required.

Plans, elevations and sections to $\frac{1}{8}$ scale, with a block plan showing drainage to $\frac{1}{16}$ scale, and one sheet of details $\frac{1}{2}$ in. of principal feature of front elevation and one sheet of mouldings full size.

The drawings to be executed on Imperial size sheets, and mounted on strainers or millboard, limited to three sheets, and the method of estimating the cubical size, the price per cubic foot allowed, and the materials proposed to be used, must be noted on one of the drawings.

A perspective sketch in colour or black and white, the work of the competitor may be included but will not form an essential part of the competition. Drawings

must be executed in black and white and marked with a motto. The name and address of the competitor must be placed in a sealed envelope which must be attached to one of the drawings.

Date of Delivery of Drawings.

The drawings must reach the Secretary on or before Tuesday, December 31st, 1907.

The Architectural Scholarship (1908).

Value £10 per annum, tenable for Three Years.

Candidates for the Architectural Scholarship shall be persons who are not more than nineteen years of age at the date of the examination, and who are receiving, or are desirous of receiving, a course of Architectural training preparatory to their eventually adopting the profession of an architect.

There will be a competitive examination in the form of an Essay on Architectural History, and a Freehand Drawing, held on *May 7th*, 1908, *entries for which must be made before May 1st*. No entrance fee is required.

Arrangements will be made for Candidates to sit in Provincial Centres as well as London. Entry form and full particulars may be obtained of the Secretary.

The Travelling Studentship.

Value £25 and a Silver Medal.

Subject for the Design Competition, 1908.

A Public Library on the open access system, to be erected on a level corner site open on two sides. The estimate of cost which is not to exceed £5,000, is to be based on the cubical contents, measured from the bottom of footings to half-way up the roof. The dimensions and total to be stated with the price per cubic foot.

The method of estimating the cost, and the materials proposed to be used, to be noted on the drawings.

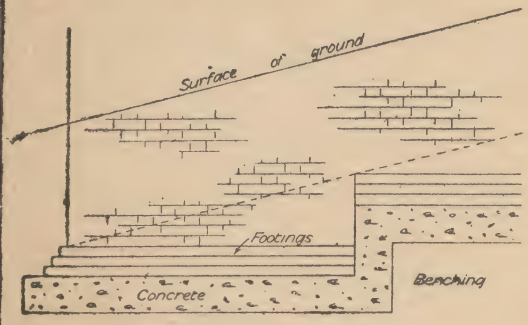
Drawings Required.

A complete set of working drawings to $\frac{1}{8}$ in. scale, comprising plans, longitudinal and cross sections, also elevations, block plan ($\frac{1}{16}$-in. scale) showing drainage, and two sheets of $\frac{1}{2}$-in. details.

The drawings are to be of such a character as would be required by a contractor to carry out the work, and are to be executed on not less than half double-elephant size sheets, mounted on strainers or millboard.

Drawings must reach the Secretary not later than May 1st, 1908. Copies of the conditions, site plan and other details may be obtained on application to the Secretary.

BUILDING CONSTRUCTION EXAMINATION OCTOBER 1907.



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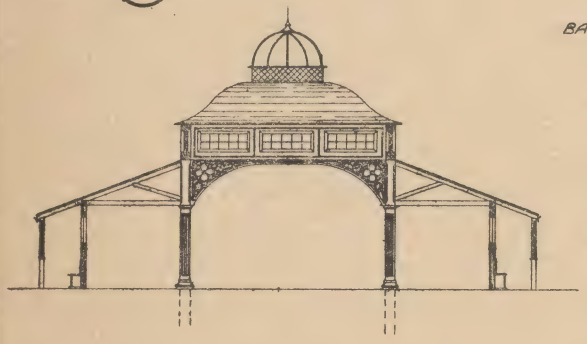

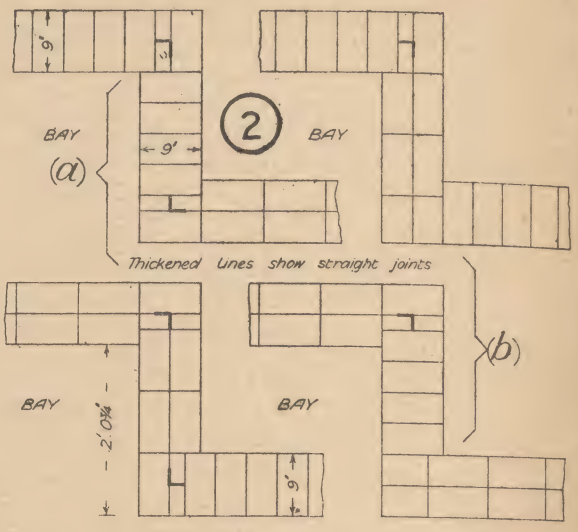

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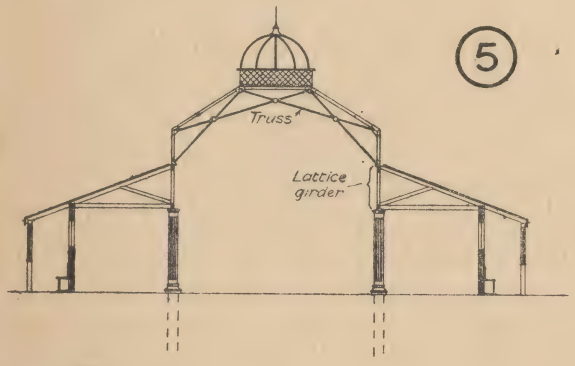

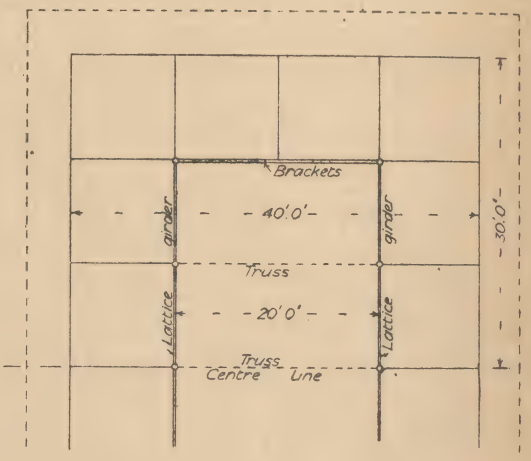

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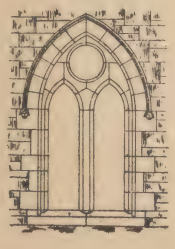

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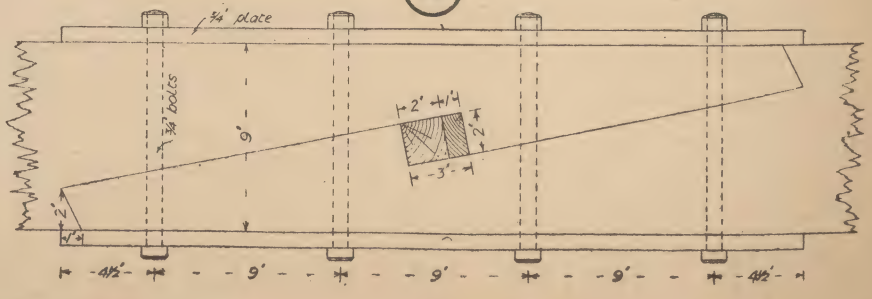


The Society of Architects.

Examination, October, 1907.

Section II.—BUILDING CONSTRUCTION AND MATERIALS.

WORKED ANSWERS by HENRY ADAMS, M.Inst.C.E., Examiner.

Subject a.—CONSTRUCTION.

Question 1.—*Show by sketch of brick wall with footings and concrete what is meant by benched foundations, and describe when they are required.*

Answer 1.—See diagram 1. Stepped footings and benched foundations are required when a wall is built on sloping ground, in order to prevent any tendency to slip.

Question 2.—*A square bay in 9 in. brickwork has a projection of 2 ft. 0¾ in. from a 9 in. wall. Show two courses of the bonding at one end in English bond. (Scale, 1 in. to 1 ft.).*

Answer 2.—See diagram 2, (*a*) and (*b*) show each two adjacent courses of alternative bonding.

Question 3.—*Give a neat sketch of the exterior of a pointed arch window with plate tracery, and mark distinctly the jointing of the stones.*

Answer 3.—See diagram 3.

Question 4.—*Draw the elevation of a scarf joint for a tie beam, 9 in. by 6 in., showing all details. (Scale, 3 in. to 1 ft.).*

Answer 4.—A tie beam should not have a scarf joint if it can be avoided. The usual joint when a scarf is made is shown in diagram 3, but it is not the best form of joint for combined tension and cross strain, such as a tie beam undergoes.

Question 5.—*Show by sketches how you would roof a Pier Concert room 60 ft. by 40 ft. If desired, there may be two columns 20 ft. apart below each truss.*

Answer 5.—See diagram 5.

Question 6.—*Draw sections through the bottom rail and sill of a 1½ in. casement window (a) opening inwards; (b) opening outwards. (Scale, full size).*

Answer 6.—See diagram 6 (*a*) shows section for casement opening inwards and (*b*) for casement opening outwards.

Question 7.—*Sketch and describe the construction of two varieties of fire-resisting partitions.*

Answer 7.—See diagram 7. (*a*) Shows Turner's Partition Wall built with "Insulation Brick Blocks," with hoop iron bond and keyed for plaster. (*b*) Shows the "Fireproof Construction Co.'s Hygienic Fireproof Block Partition," 2 inches thick, composed of plaster slabs with dowels and metal clamps.

Question 8.—*A rolled joist lintel, 6 in. deep and 6 ft. span, is to be built in at each end so as to carry a maximum load. Draw the elevation to a scale of 1 in. to 1 ft. and shade the parts in compression. State how much more the joist will carry than if it had been merely supported at the ends.*

Answer 8.—See diagram 8. When the joist is built in $\frac{1}{4}$ span at each end, it will carry 50 per cent. increase of load, or half as much again as when merely supported at the ends.

Subject b.—MATERIALS.

Question 1.—

(*a*) *Of what does plaster of Paris consist, and for what is it used in building construction?*

(*b*) *What variety of lime is used in plastering, and why?*

Answer 1.—

(*a*) Plaster of Paris consists of partly calcined gypsum (hydrous sulphate of lime). It is mostly used in building construction for enrichments to plaster cornices, etc., as it is capable of taking very sharp impressions. It is also used to "gauge" or stiffen the finishing coat of wall plaster.

(*b*) The lime used in plastering is "pure" or non-hydraulic. The reason is that it slakes freely and is less likely to contain unslaked particles, which might "blow," while it will adhere to rough surfaces and can be brought to a smooth and level face. Another reason for its use is that it is porous and therefore absorbs the moisture which would otherwise collect on the plaster and run down.

Question 2.—

(*a*) *How is sheet lead made?*

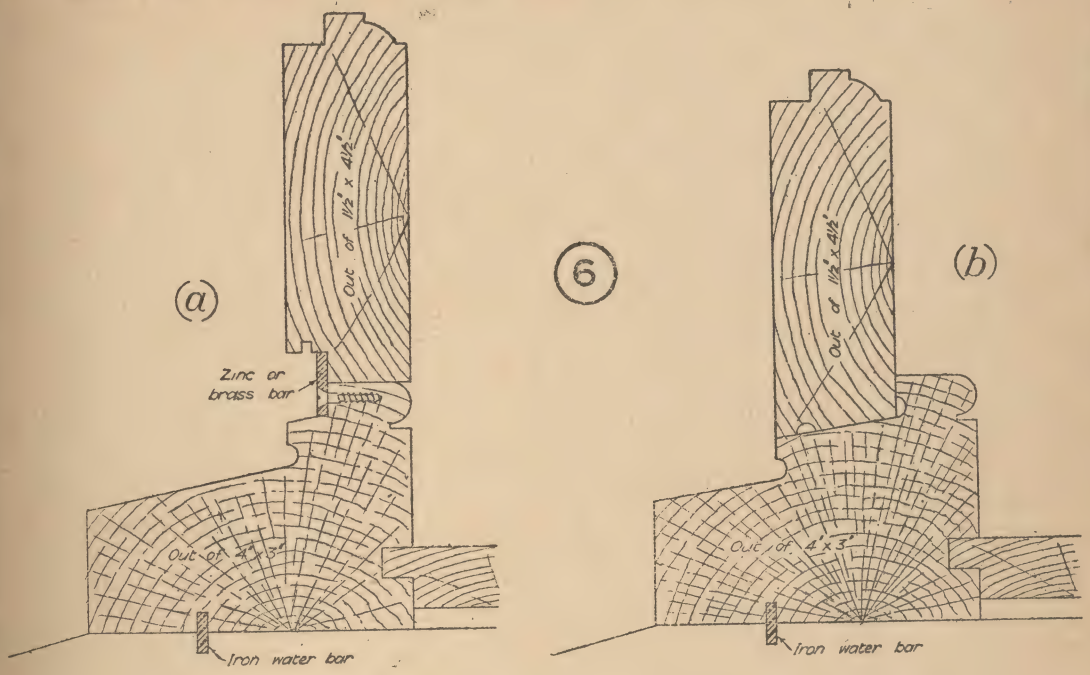
(*b*) *Name some of its uses, giving the thickness in each case.*

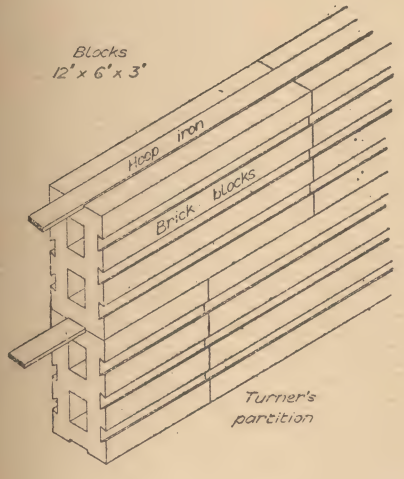
Answer 2.—

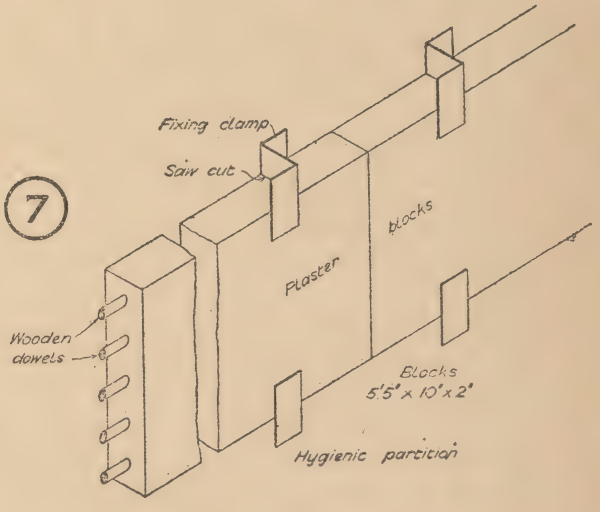
(*a*) Sheet lead is made by first casting a plate of lead say 5 to 6 in. thick, and then passing it under steel rollers which gradually squeeze it down to the required thickness. These sheets are known as "milled lead." Another method is to pour the molten lead on to a levelled bed of sand on a wooden bench. A "strike" is then passed over at the required thickness to sweep away the surplus. These sheets are known as "cast lead."

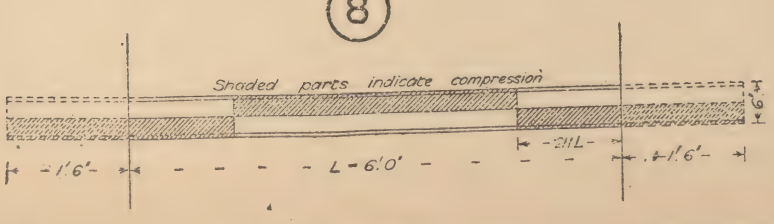
(*b*) Sheet lead is used generally for making watertight joints in roofs, and for lining sinks and cisterns. The thickness of lead is usually denoted by its weight per ft. sup. and the following are the weights usually adopted in good work. Flashings to roofs 5 lbs.; hips, ridges, small gutters and the sides of sinks 6 lbs.; cisterns, rainwater pipes, 7 lbs.; roofs, flats, main gutters, and sink bottoms, 8 lbs. lead.

BUILDING CONSTRUCTION EXAMINATION OCTOBER 1907









Question 3.—

(*a*) *Describe the manufacture of some well-known variety of artificial stone.*

(*b*) *What are the advantages or disadvantages compared with natural stone?*

Answer 3.—

(*a*) Victoria stone is made by mixing three parts of well-washed Leicestershire granite, finely crushed, with one part of selected Portland cement in a dry state, by machinery. Water is then carefully added so as not to wash any fine particles away, and the moulds are at once filled before any initial set of the concrete takes place. The moulds are allowed to stand on benches until sufficiently set and when the slabs are dry they are taken out of the moulds and placed side by side in a tank and covered with a solution of silicate of soda. They are kept in the tank for about 14 days when they are taken out and stacked in the stoneyard to season.

(*b*) The advantages of this stone are that for paving it wears evenly and slowly, is practically non-absorbent, and has a great resistance to crushing. For moulded blocks it can be brought to finished proportions direct. The disadvantages are, its appearance, and the difficulty of dressing it if occasion should arise.

Question 4.—*Calculate the safe load that may be put upon a* 6 *in. by* 6 *in. fir post,* 12 *ft. high, with flat ends.*

Answer 4.—The approximate safe load on a fir post being 4 cwt. per sq. in., a 6 in. by 6 in. post would carry $6 \times 6 \times 4 = 144$ cwt. $= 7{\cdot}2$ tons. More accurately, by the Gordon formula, $W = \dfrac{FS}{1 + \dfrac{l^2}{250d^2}} = \dfrac{2{\cdot}5 \times 36}{1 + \dfrac{(12 \times 12)^2}{250 \times 6^2}} = 27{\cdot}3$ tons breaking weight. Allow factor of safety of 4, then safe maximum load $= \dfrac{27{\cdot}3}{4} = 6{\cdot}825$ tons, but the ordinary working load $= \dfrac{27{\cdot}3}{6} = 4{\cdot}55$ tons.

The Legal Liability of the Architect.

On December 12th, 1907, at 8 p.m., an address on "The Legal Liability of the Architect" will be delivered before The Society of Architects, by Mr. Montefiore Brice, of the Middle Temple and the Oxford Circuit, Barrister-at-Law.

Mr. Brice will deal with the subject under the following heads :—

I. The Architect's Duties and Obligations.
II. His Relation to the Building Owner or Employer in the three-fold and separable capacities of (1) Adviser; (2) Designer; and (3) as Supervisor and Agent.
III. His Relation to the Contractor.
IV. His Relation to Public Authorities.
V. His Relation to Private Persons.
VI. As Valuer and Arbitrator; and
VII. The Duration of his Liability.

The Society of Architects.

Examination, October, 1907.

Section III.—PRACTICE. Subject a.—SPECIFICATIONS.

WORKED ANSWERS by W. R. MALLETT, F.S.I., Examiner.

Question 1.—*State what matters in an ordinary Building Contract are to be left to the absolute determination of the Architect and what are matters for reference to the Arbitrator to be determined by him.*

Answer 1.

In ordinary Building Contracts the matters usually left to the sole determination of the architect are the interpretation of the drawings, so that should there be any discrepancies between them or between the drawings and specification he shall decide which is to be followed; the power to request the removal from the works of workmen who are incompetent or misconduct themselves; any necessary arrangements for assigning the contract or sub-letting the work; power to insist on work being opened up for inspection, etc. In some cases the architect is made the sole authority as to the quality of the materials and workmanship, and has power to order the removal of defective material and work; or, on default of the contractor, to employ other persons to re-execute the same.

Amongst the most important matters for reference to an arbitrator are, what extension of time should be allowed and additional sums of money (if any) should be paid to the contractor by reason of the work being delayed through no fault of the contractor, as for instance, by litigation, strikes, lock-outs, or exceptionally inclement weather, failure of employer to meet the certificates of the architect, delay on the architect's part in furnishing necessary detail drawings, also any allowances for additional cost of work by reason of the detail drawings entailing more outlay on labour, etc., than the contract drawings indicated; or by the requisitions of the architect in other respects, beyond the true intent and meaning of the signed drawings and specification; or for work done to meet the requirements of building bye-laws, etc., though not ordered by the architect.

As to the amount of the certificates issued for payments on account, and the total sum to be paid under the contract, and to decide whether certificates are improperly witheld. Whether the works are completed or not, and if not completed at the time provided for in the contract, what amount should be deducted by way of fines, etc., and as to the construction of the conditions of the contract generally.

To determine the amount of the costs of the arbitration and award, and in what proportion they are to be paid by the parties; also, in case of the decease of an appointed architect, to decide whether the contractor's objection to his proposed successor is a valid one.

In the latest form of contract sanctioned by the R.I.B.A., the arbitrator's powers are very large; he " shall have power to open up, review and revise any certificate, opinion, decision, requisition or notice, save in regard to the said matters expressly excepted above; and to determine all matters in dispute which shall be submitted to him . . . in the same manner as if no such certificate opinion decision requisition or notice had been given." The " exceptions above " refer only to deciding which drawings are to be followed. Opening up work to discover defects, dismissal of workmen, assignment of contract and sub-letting; thus leaving the final determination of the question of the quality of the materials and workmanship in the hands of the arbitrator.

Question 2.

(*a*) *Describe the different kinds of bricks used for facings and state for what positions they are most suitable.*

(*b*) *Draft a short Specification for the construction of the entablature* 34″ *girt* (*about*) *to the facade of a town house, in red moulded bricks and give a rough sketch of same.*

Answer 2.

(*a*). **Bricks.**

There is considerable variety in the bricks used for facings, and most of the counties of England have good supplies of local bricks for ordinary use, they may be either hand-made or wire-cut or pressed. In London and the home counties Clamp burnt stock bricks are much used for factories, workshops and other common buildings, garden walls, etc., and, when picked of an even colour, for the better class of cottages, villas, etc. Malm stocks were formerly specified, but they are out of favour at the present time, as the colour is too light, and is easily affected by smoke, etc., in towns; they are still used for gauged and cut work, and for arches, etc., with stock brick facings.

Gault bricks from the wealden clays of Kent are a good facing brick for ordinary work, but are rather pale in colour. Fletton bricks from the neighbourhood of Peterborough are good building bricks and are adapted for facings internally, and are sometimes used externally where appearance is not a great consideration, being carefully selected for evenness of tint, etc., but they are not equal to red kiln bricks. White facing bricks from Norfolk, Suffolk, Essex and elsewhere are good for positions where light or a white appearance is required, but are not much used in the present day; a special sort is made for cut and rubbed work.

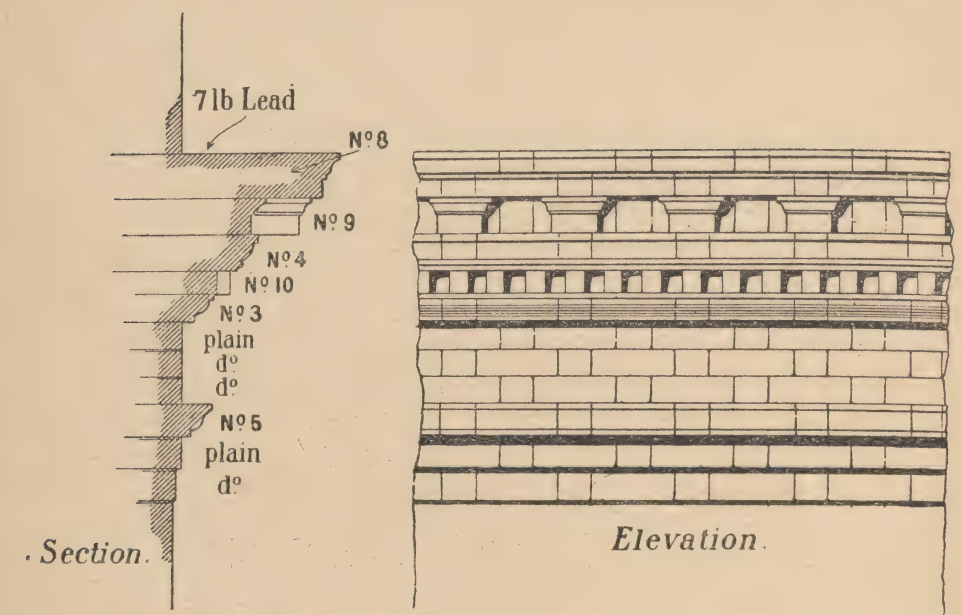
The bricks most generally specified for facings are red kiln burnt bricks, of which there are many kinds, excellent in make and hard in texture; various tints are obtainable from light red, cherry, orange, and dark red to brown, and the surfaces vary considerably, some being hard and smooth, almost glossy, while others are finished with a rough or sanded face; they mostly work to about four courses to a foot in height, but of late years smaller bricks have been introduced working five courses to the foot. These bricks are suitable for good domestic work in town or country, and public buildings such as churches, town halls, libraries, baths, etc., etc., and for use with them are many varieties, moulded and ornamental bricks for sills, copings, strings, architraves, cornices, chimney stacks, columns, etc., made by numerous manufacturers in different parts of the country; and special bricks are made for cut and rubbed work, as arches and mouldings. Pether's diapered bricks, from the Medway district, may be had either in red or white and are suitable for arches, chimneys, etc.

Buff fire-clay and blue vitreous bricks chiefly from Shropshire and Staffordshire may be obtained either wire-cut or pressed, and are suitable for plinths, loopholes to warehouses, cartways, etc., where rough usage is likely to occur; they are very useful for the construction of piers where heavy weights have to be sustained. Brown salt-glazed bricks are sometimes used for facings in similar situations, and white-glazed bricks in areas for light, and for facing walls opposite to windows for the sake of the reflected light; also for walls, etc., of swimming baths, underground corridors, dairies, bakeries, butchers' and fishmongers' shops, poulterers' shops, slaughter-houses, engine rooms, lavatories, and in all situations where great cleanliness is essential.

Glazed bricks of almost all colours are now made by numerous manufacturers, and are used in lieu of, or combined with, white, for many of the purposes indicated above, where greater decorative effect is required; also, to a very limited extent for the facades, etc., of town houses. There is a great variety of glazed moulded and ornamental bricks to form panels, strings, pilasters, cornices, etc., etc., made to work in with the former.

(*b*) **Specification.**

Construct the entablature to the façade of the house with red moulded bricks manufactured by Messrs.—— & Co. of —— in accordance with the numbers from their list as figured on the detail drawing; the projecting courses to be all headers, the work generally to be built in mortar with $\frac{1}{8}''$ joints; but the corona and backing to be built in Portland cement mortar. The lines of the mouldings to be kept as true as possible, but no cutting or rubbing of the exposed surfaces will be allowed, and the mitres are to be formed with proper mitred blocks.



Question 3.—*Give a general description of the various slates in the market suitable for roof coverings; select one variety, and write a Specification for covering a roof with them.*

Answer 3.

Slates.

There are now many varieties and sizes of slates in the market, formerly the sizes generally used were "Duchesses" 24″ × 12″, "Countesses" 20″ × 10″, "Ladies" 16″ × 8″, and "Doubles" 13″ × 6″. "Marchionesses" and "Vicountesses" were seldom used. Cutting all slates to these sizes caused great waste in the quarries, the owners have therefore introduced a considerable number of intermediate sizes and varied shapes and over twenty different sorts may now be obtained, some as small as 10″ × 8″. The disadvantage of adopting unusual sizes and shapes is the difficulty and extra cost of repairs, as builders do not keep them in stock and would have to cut larger slates to the required shapes, etc.

The slates mostly used are from North Wales, where there are about forty quarries. Amongst the best known are the Bangor slates from quarries at Penrhyn, Velinheli and Port Dinorwic, the Port Madoc slates from the Oakley quarries, Blaenau Festiniog; there are, however, other good quarries in Carnarvonshire, and one at Corris Machyntleth. Welsh slates are usually of a purple (blue) tint, those from Festiniog and Corris being rather greyer than others, but slates of a reddish or greenish tint may be obtained, as from Whitland Abbey and Arthog. All these slates may be had of many sizes and shapes.

Amongst the most beautiful Welsh slates are those from Precelly, near Port Madoc, they are mottled of many varied tints, thick in substance and somewhat rough on the surface. The usual method of laying them is to have random or graduated courses, large at the eaves to small at the ridge; the effect is much more pleasing than work done with slates of a uniform tint and gauge.

Good slates are obtainable from Cumberland and Westmoreland; at Coniston of a grey tint, and green at Penrith, Elterwater, Buttermere (Honister Craig), Tilberthwaite Lingmore, Broad Mass, etc.; they may be had of various tints, as light or dark sea green or olive green. Cornwall produces an excellent slate of a greyish tint at the Old Delabole quarries, near Camelford.

Slates are imported from France, but they are not considered so good as British. Also from North America from whence come the well-known "Ereka permanent green" slates, and others, as "American blue" and "American Bangors," red or purple.

Formerly large slabs of slate were used to cover roofs; they may be seen occasionally in country places, and in recent years some substitutes for slates, as "Uralite," "Eternit" (asbestos cement), etc., have been introduced as roof coverings for laying in the same manner as slating.

Specification.

The slates generally are to be best Penrhyn Bangor blue slates, and those for the bands to be of a red tint; all to be whole, sound, and free from flaws, shakes, lamination, and other defects. The nails are to be 1½″ stout malleable copper with flat heads.

Cover the roof with Countess slating laid with a 3″ lap, and each slate secured by two nails at the head. The eaves to be laid double, neatly cut to all hips, valleys verges, dormers, skylights, chimney stacks, etc., etc.

The ridges and hips are to be covered with Messrs. —— & Co.'s No. 12 plain red roll ridge tiles set and pointed in cement with No. 10 finials to match at end of main ridge, as indicated.

Make good any slates that may become broken during the progress of the works, and at the completion leave the roof perfectly water-tight, and all slater's work complete and perfect.

Question 4.—*Draft a Specification for the doors of a country house, costing, say,* £2,000. (*a*) *Attics,* (*b*) *bedrooms, etc., on first floor,* (*c*) *kitchen offices,* (*d*) *ground-floor rooms, and* (*e*) *front and trades doors; providing what you think suitable in the way of linings, frames, architraves, locks, furniture, etc., complete.*

Answer 4. **Doors.**

The doors are to be made of best yellow deal for external use and of American red pine internally except otherwise particularly described. All panels not obtainable in one width, are to be plowed, feather tongued and glue jointed; the internal doors are to be put together with best town glue, and the external doors with paint. The dimensions given are the sawn sizes and $\frac{1}{16}''$ will be allowed off for each wrought face, and all work showing to view to be wrought. The ironmongery is to be neatly fitted and fixed with the requisite screws, etc.

The doors on attic floor are to be 2′ 8″ × 6′ 8″ × $1\frac{1}{2}''$, four panel square both sides; each hung by a pair of $3\frac{1}{2}''$ cast iron butts to inch plain linings, with 3″ × $\frac{1}{2}''$ stops bradded on for rebates; finish with Elliotts' steam struck moulded architraves, No. 351, about $3\frac{1}{2}''$ girt, mitred on $2\frac{1}{4}''$ × $\frac{3}{4}''$ framed and splayed grounds for plastering, and provide with Messrs. —— & Co.'s No. 26 6″ 2-bolt rim locks and plain brass furniture; the architrave moulding to be omitted in store and box rooms, which are to have 4″ dead locks, keys and brass escutcheons in lieu of rim locks.

The doors on first floor are to be 2′ 10″ × 6′ 10″ × $1\frac{3}{4}''$ thick, framed in five panels to detail, and moulded both sides with Messrs. —— & Co.'s No. 720 pine steam struck mouldings, $1\frac{1}{2}''$ girt, mitred round the panels. Hang each door with a pair of 4″ cast iron butts to linings with stops as above described; put 3″ × $\frac{3}{4}''$ framed and splayed grounds for plastering, and finish with Messrs. —— & Co.'s moulded architraves, No. 122, about 6″ girt, mitred at angles and with 7″ × $1\frac{1}{2}''$ splayed plinths to detail 9″ high. Provide with Messrs. —— & Co.'s No. 9 6″ centre bit 2-bolt mortice locks, with Mace's patent spindles and brass knobs and furniture, and two brass finger plates, Messrs. —— & Co.'s No. 4 long and short, secured by brass pins on each side of doors; the architrave and finger plates to be omitted inside the linen closet.

The doors to offices generally are to be 2′ 10″ × 6′ 10″ × $1\frac{3}{4}''$ thick, four panel square both sides, each hung by a pair of 4″ cast-iron butts to linings with stops as before described, 3″ × $\frac{3}{4}''$ framed and splayed grounds, and Messrs. —— & Co.'s No. 150 pine steam struck moulded architrave, about 5″ girt. Provide with 6″ two-bolt rim locks and brass furniture as for attics. The outside of doorway leading from the hall to kitchen offices to have architraves, door handles and furniture, and brass plate to match those of ground floor rooms; and the outer door of scullery to be similar to the others, but bead flush outside panels, and to have $4\frac{1}{2}''$ × 3″ fir proper frame, made good inside with beaded stop for plastering, instead of the linings stop and architrave described above, and two 8″ strong japanned wrought-iron barrel bolts in addition to the lock.

The cellar doors are to be inch proper ledged doors 2′ 6″ × 6′ 6″; each hung by a pair of 18″ cross garnet hinges to $4\frac{1}{2}''$ × 3″ fir proper frames, and provided with

japanned wrought-iron Norfolk latch ; the wine cellar to have a 6″ oak stock dead lock, brass warded and with brass bolt.

The joinery to doorways of principal rooms on ground floor are to be in American white wood for staining and polishing, and worked to detail drawings ; the doors to be 2″ thick, 3′ 0″ × 7′ 0″, six panel, moulded both sides, and the panels sunk and mitred margins and raised centres with moulding on the solid ; each hung by three 4″ heavy brass rising butt hinges to 1¼″, double rebated and beaded grounds, tongued and mitred at angles, with 4½″ × ¾″ framed and splayed grounds and dovetailed backings to the linings ; finish with bolection moulded architraves 6″ girt on both sides, on 6″ × 2″ semi-octagonal plinths with small cavetto moulding on top edge. Each door to be provided with Messrs. —— & Co.'s No. 41 — mortice lock, four lever, with two brass bolts, Mace's patent spindle and polished brass knobs and furniture No. 24, and ornamental lock plates No. 36, in dull polished brass on both sides ; the lock plates to be omitted inside the W.C. and cloak-room.

The trade's door is to be 2′ 10″ × 6′ 10″ × 2″ thick deal, the lower portion in two panels square inside, and bolection moulded outside, and the upper part to be framed with stout moulded sash bars in small squares as indicated on the drawing ; hang by a pair of 4″ cast-iron butts to 4½″ × 4″ fir proper frame, and provide with Messrs. —— & Co.'s No. 6 two-bolt rim lock, and brass furniture, two 10″ japanned wrought-iron barrel bolts with brass knobs, and 10″ door chain and plate to match. Make good inside with inch beaded and tongued linings and architraves as provided for the kitchen offices, and put a 4″ girt shrouded weather mould outside the door. Form a fanlight over the door with proper transome to frame, and 2″ deal moulded sash hung on top, to open outwards, by a pair of 2″ cast-iron butts, and provided with Messrs. —— & Co.'s patent No. 2 fanlight opener with screw gearing, etc., complete.

The front entrance is to have door 3′ 3″ × 7′ 2″ × 2¼″ thick, in deal, framed as indicated by the detail drawing ; the lower panels moulded inside, sunk and raised, etc., to match the adjacent doors and bolection moulded outside with mitred sunk margin to panels, and moulding on the solid where raised ; the upper part to be formed with stout moulded bars and prepared for leaded glazing with small mouldings mitred round and bradded on : hang by three strong brass butt hinges to 5″ × 4″ fir proper frame moulded outside and beaded inside with steel dowels to stone sill. Provide with a Yale lock and night latch with two keys and brass escutcheon with cover plate p.c. value 15*s*. the set ; two 10″ strong brass barrel bolts, brass knocker p.c. 5*s*., and postal bar handle and letter plate combined, p.c. value 20*s*., to be selected. Make good inside with inch wrought and beaded linings and grounds, architraves and plinths to correspond with the adjacent doors.

Question 5.—*Describe, as fully as you can, the work of providing a hot-water service to bath and lavatory adjacent, from a high-pressure boiler in the kitchener.*

Answer 5. **Hot-water Engineer.**

All the pipes are to be galvanised wrought iron welded tubes, the sizes given being the internal diameters, fixed with red lead joints and the necessary wall hooks, etc., and provided with the requisite tees, bends, brass unions, and other fittings, bends to be used in preference to elbows wherever practicable.

Provide and fix where directed a galvanised wrought iron cylinder 18″ diameter, and 3′ 6″ high, holding 40 gallons, formed with w.i. flanges and $\frac{1}{8}$″ plate rivetted together with proper manhole and cover bolted on with asbestos packing; provide with six flanged outlets and inlets with brass unions for the pipes complete, and provide suitable bearers for the cylinder.

Drill the boiler of kitchener, and provide $1\frac{1}{2}$″ flow and return pipes from same to cylinder with $1\frac{1}{2}$″ brass unions to the boiler, and Messrs. —— & Co.'s No. 14 $\frac{3}{4}$″ gun-metal dead weight safety valve, and short length of inch pipe and brass union, to be fixed as may be directed, also $\frac{3}{4}$″ pipe and $\frac{3}{4}$″ gun-metal screw-down bib cock from bottom of boiler or from return pipe for emptying the system for repairs, etc.

Lay on hot water from cylinder to bath and lavatory adjacent with inch flow and return pipes, with $\frac{3}{4}$″ branches to the bath supply valve and lavatory basin with proper joints to the fittings on same. The expansion pipe from top of cylinder to cold water tank in roof to be inch diameter, and the cold water supply from same to bottom of cylinder to be $\frac{3}{4}$″ pipe with a $\frac{3}{4}$″ gun-metal screw-down stop cock inserted close to the cistern to shut off water when requisite.

Leave all in good working order on completion.

Question 6.—*Write a Specification for the Glazier's work to the several rooms, etc., in question* 4, *providing what you consider suitable.*

Answer 6. **Glazier.**

The glass throughout is to be of the best glazing quality, cut into squares as indicated by the drawings, bedded and back puttied in good oil putty, and the plate glass to be secured by sprigs in addition.

Sheet glass. Glaze the windows of attic story with 21 oz. sheet glass and those of the first floor and kitchen offices with 26 oz.

Hartley's Glass, etc. The windows in basement are to have Hartley's rolled ribbed glass $\frac{1}{8}$″ thick, and similarly glaze the skylights; securing the sheets with zinc clips at the bottoms. The trade's door and fanlight over to be glazed with $\frac{1}{8}$″ muffled glass in approved tints to be selected by the architect.

Plate Glass. Glaze the windows of the principal rooms on ground floor with British polished plate glass about $\frac{1}{4}$″ thick.

Leaded Glazing. The panels of front door are to be formed of 21 oz. tinted sheet glass, with medium wide lead cames, worked to the design shown on detail drawing, and with clear glass borders all round the panels ; the glass to be cemented into the leadwork so as to be weather-proof and latter to be secured by copper wire attachments to $\frac{1}{4}$″ diameter wrought iron saddle bars, not more than 15″ apart or from the wood framing.

Make good any glazing that may become broken by accident or otherwise, and leave all glazier's work clean, complete and perfect in every respect.

A New Wood Preservative.

An attractive booklet comes from the well-known " Felt " firm of D. Anderson and Son, Ltd., of Belfast and London, setting forth the advantages of " Sideroleum " as an ideal wood preservative. The coloured photographic illustrations show its suitability for use in connection with estate fencing, half timber work and internal woodwork, landing stages, lock gates, race stands, cooling towers and other wooden structures, while it is claimed to be useful in stables, etc., for getting rid of vermin, and as a protection in the Colonies against white ants. It is easily applied and makes a good floor stain, but a warning is issued against allowing the fluid to come into contact with plant life. It is therefore unsuitable for greenhouse woodwork. The preparation has been put to some severe tests and the best testimonies to its efficiency are the repeat orders with which the firm have been favoured.

Correspondence.

To the Editor of "The Journal."

Openings in Vancouver.

Dear Sir,—Several men have written me with reference to an item in the Society's journal that " Vancouver was a good place for architects." Vancouver is only a small city, 50,000 to 70,000. Generally a poor class of work is done, nothing like English work, it is all a matter of cheapness. Wages for architectural assistants are low, and living is very high, about double that of England. It is difficult for assistants to get work here as the men cannot afford to pay many or much. Do not send men out here, they are calling on me every day or so wanting work. What is wanted in this part of Canada, is labourers.

Haddon Building,
633, Hastings Street, Vancouver, B.C.
October 29th, 1907.

Yours faithfully,
Frank W. Macey.

Mainly about Members.

Mr. EDGAR M. LEEST has been appointed Consulting Architect to the Cornwall, Stonehouse, West Devon Royal Albert Hospital at Devonport in the place of Mr. H. J. Snell, retired.

PROFESSOR HENRY ADAMS, Member of Council and Chairman of Examiners, has been unanimously elected Chairman of the Works and Highway Committee of the Lewisham Borough Council.

An interesting series of articles, by MR. ALBERT C. FREEMAN, on the "Planning of Fever Hospitals, and Disinfecting and Cleansing Stations," is now running through the columns of *The Sanitary Record*. These contributions should be found both useful and interesting.

The new Sunday schools, which have been erected from the designs of MR. H. E. LAVENDER in connection with Trinity Wesleyan Church, Wolverhampton, were recently opened. The new building, which has cost £2,500, provides accommodation for 300 scholars, and has class-rooms, kitchen, and other requirements.

In the recent "Architectural Dis-Orders Competition," conducted by *The Builders' Journal*, MR. H. KENDALL (Member) secured the ninth prize in Class A. (architecture), and Mr. C. B. WILLCOCKS and MISS ANNIE HALL (Students) other prizes in that class. Mr. Willcocks also obtained the eighth prize in Class B. (building).

A new infants' school has been erected at Bream. The building is constructed with grey Forest stone walls with red Forest stone dressings, and the roofs are covered with red tiles. It will accommodate 200 children. The designs were by MR. R. S. PHILLIPS, the architect and surveyor to the Gloucestershire Education Committee.

The foundation stones were recently laid of a school chapel, which is being erected by the Blackburn Primitive Methodist Second Circuit on a site adjoining Cedar Street and Hawthorne Street. The land has cost £500, and the school, which will seat 700 persons, will cost about £1,800. The architect is MR. JOHN T. HENSHAW, of Blackburn and Burnley.

The new reredos in the parish church of Bury Hill, Herefordshire, unveiled at Easter, 1906, has just been completed by the erection of carved figures of the Evangelists, and ten figures of angels and saints, and other works of decoration have also been carried out in the church. The reredos, wall-panelling, and organ front are the work of Mr. Dredge, of Hereford. The vestry alterations were made from the designs of Messrs. Groome and BETTINGTON, architects, Palace Chambers, Hereford.

MR. ALBERT E. PRIDMORE, Past President, Citizen, Liveryman and Painter Stainer, has resigned his seat as one of the representatives of the Ward of Bishopsgate on the Court of Common Council of the City of London. During his fourteen

years of public service Mr. Pridmore has gained the confidence and esteem of the electors and his colleagues on the Council, and has occupied the position of Chairman of several important Committees, including the Guildhall School of Music, the Leadenhall Markets and others.

Conferences held with the Sheffield Society of Architects and Surveyors have resulted in a scheme for the establishment of a department of architecture at Sheffield University, and Mr. W. S. Purchon has been appointed as lecturer in this subject. It is hoped that the department may be in working order immediately. As a result of this, and the growth of the chemical department, it is found that the existing accommodation offered by the University buildings is hardly sufficient to meet the demands made on it, and some re-distribution of rooms will be necessary.

Mr. Ralph Unwin, architect to Letchworth Garden City, lecturing to the Birmingham Ruskin Society on town planning, referred with satisfaction to the promise of Mr. Burns to bring in next Session a measure, giving London certain powers of town planning. Germany had taken the lead in laying out garden cities, in which woods, natural undulations, and other advantages had been utilised, and wherever possible a beautiful vista had been secured at the end of the main thoroughfares. Suburbs should be laid out to secure easy access from one part to another, and at the same time be pleasant to live in.

St. Julian's parish church, Norwich, has been re-opened after restoration. The chief work has been the repair of the ancient round tower. The cracks have been closed and strengthening steel girders inserted. The floors of the tower, belfry, and bell chamber have been entirely renewed, and the bell re-hung. The tower roof, which is new, is supported by oak timbers, and covered with lead. The porch and vestry have been repaired, and the wooden flooring of the church and chancel renewed. The interior of the church has been cleaned and re-painted, and the screen raised and decorated. The work has been carried out under the superintendence of the architect, Mr. A. J. Lacey, of Norwich.

Mr. Walter Emden, Past President, who has been elected Mayor of Dover, has long been an active participator in public affairs, and among the public positions which he holds or has recently held, are those of a member of the Metropolitan Water Board, an Alderman of the City of Westminster, Mayor of the City of Westminster in 1903-4, and a Magistrate of the County of London. Outside the range of his experiences as a member of public bodies, Mr. Walter Emden, in his profession as an architect, has been connected with the construction of many large public works, such as the Thames Embankment, the East London Railway, and the Metropolitan Middle Level Sewers. He designed Garrick's, Terry's, Court, Duke of York's, Ipswich, and Southampton Theatres. Amongst the large hotels that he has been architect for are Hotel Victoria, Newmarket; Hotel de l'Europe, Leicester Square; Piccadilly Hotel, Prince's Restaurant, and many others.

Registration of Architects.

A Provincial President's Views.

Mr. Arthur B. Plummer, F.R.I.B.A., in his Presidential address before the Northern Architectural Association, said they had not yet made the advance they should have done in the matter of the registration and qualification of all architects, because the public at large had not yet realised the importance of the question, and they did not know how nearly it concerns them. Hitherto, as a general rule, the subject had been discussed only by members of the profession. The public now realised, as they did not at one time, how important it was that members of the medical and legal and other professions should be legally qualified men. He did not think that the great majority of people were yet capable of judging whether buildings they saw were the work of able or inferior men. It was, nevertheless, important that architects should be qualified, and determined to carry out good work without entirely disobeying their clients' demands as regards matters of detail.

If an artist paints an inferior picture we need not hang it before our eyes continually. If an architect, or someone who undertakes to do architect's work, is responsible for designing a building with bad outline and detail in an important position, the public are unable to avoid seeing it, and they are, either knowingly or unknowingly, continually injured by doing so.

Apart from the art view of the question, the structural stability of buildings is, and should be realised to be, a matter of importance to the public, and under this head also they need to be taught how vital it is that only qualified men should be allowed to call themselves architects.

Again, even the best of architects are liable to make mistakes and miscalculations, and if the best and most conscientious men are liable to meet with mishaps, the dangers are many times increased when unqualified men are allowed to act as architects.

The public have now to a considerable extent realised how important it is that sanitary details should be understood, and they are also showing a desire to have artistic buildings. This knowledge, when to some extent further obtained, may lead them to require and demand that architects shall be legally qualified to erect buildings structurally and in every way good. Even if for lack of funds or other reasons their designs are not of a costly character, they may be good as regards outline and grouping, and especially skyline. The public may learn to know that a building may be architecturally and structurally good, even though it may be unobtrusive.

Registration and legal qualification of architects will not make architecture less of a fine art, nor will it make the ability of some men less pronounced. It will

give architects more responsibility and a more definite legal position, and produce a better educated class of men, who will obtain a better status.

Municipal Surveyors and Private Practice.

If the profession was unified by registration and in future by compulsory qualification, we could take united action to have it made illegal for a district council, etc., to give a surveyor, sanitary inspector, clerk of works, or suchlike officials, too small a salary, and then to make it more than possible for him to live by allowing him to practise and call himself an architect (whether at all qualified or not) in the district where he should only be acting in an administrative and advisory capacity. If there is not enough work in one district to pay the proper salary of such an official, let him act for two or more adjoining districts, or make up his extra salary in some other way.

It is now several years since it was decided that the London district surveyors were in future to be appointed with the understanding that they are not to practise as architects in their own districts, and in their case they were proved by examination to be qualified men. It seems to me this regulation is even more necessary in the provinces in the case of unqualified and qualified men.

Municipal Architects.

Is it good for architecture, that even capable architects should find that more and more of the important architectural works are being taken into the hands of corporations, and they must, therefore, many of them with regret, become officials of corporate bodies? Is it to the advantage of a nation or a town that their work should be undertaken in many cases by one man, who cannot be an expert in all branches, and who in some cases produces a more or less similar class of design for all the buildings of a city?

When there is too much work to be done he has to get through it somehow, by an increase of staff and by delegating his work to others. When there is too little work a large staff has to be dismissed, or, as is more generally the case, the ratepayers have unknowingly to keep them on, doing little or no work, or else work has to be created before it is necessary, and has to be paid for at the ratepayers' expense. In the case of corporate bodies selecting in the interests of the ratepayers the best architects for each class of work, they are not expecting or causing any one man to undertake more than is possible. When the work is finished the ratepayers have no longer to pay for the upkeep of an office and staff, and the work is better done and at less cost. He thought it would be found upon inquiry that in most cases the officials of corporate bodies make use of a larger staff of assistants than practising architects find to be necessary to carry out similar work.

Legal Decisions.

London Building Act. Measurement of Buildings of Varying Height.

Attorney-General *v.* Metcalf & Greig.

In the Appeal Court, judgment was given in this appeal from a decision of Mr. Justice Kekewich's. The action was brought for an injunction to restrain the defendants from erecting any building on the west side of Salem Road, Paddington, contrary to the provisions of the London Building Act, 1894, and for a mandatory order requiring the defendants to take down so much of the block of flats as had been erected contrary to the provisions of the Act. The building in question was just under 40 ft. high up to what was called a gable, and this gable was some 20 ft. higher, and consisted of two stories. By section 62 of the Act there may be two stories in the roof of any domestic building. The plaintiffs contended that the building, under the circumstances, ought not to have been more than 40 ft. high, and that the so-called gable was not a gable within the meaning of the Act, and that, in the measurement of the height, the whole building must be looked to, and not the separate parts, some of which were recessed or put back from the side of the street. It was argued on behalf of the defendants that the measurement must be made in respect of each part of the building, whether recessed or otherwise. Mr. Justice Kekewich came to the conclusion that each part of the building ought to be regarded separately, to see whether that particular part exceeded the prescribed height, and that a building of varying height must not be regarded as a whole where any particular part exceeded the prescribed height. His Lordship, therefore, dismissed the action. The plaintiff appealed. The Master of the Rolls said that the question for decision was, under what circumstances was it not permsisible to erect on the side of any new street a building the height of which, to use general terms, exceeded the width of such street. In the present case his Lordship was of opinion that this was "a building," not several buildings, and the height of this building was not to exceed the distance of the front or nearest external wall of such building from the opposite side of such street. What was the "front" of a building was a question of fact; but the mere fact that there was a recess going back from the general line of frontage did not vary the meaning of front or nearest external wall as used in this section. His lordship thought that this was a case where the defendants ought to have an opportunity of applying to the London County Council for their consent, as provided by this section, it being clearly understood that the Court in no way indicated whether they thought this was, or was not, a case in which the rule as to height ought to be relaxed. The rest of the appeal would stand over to allow this application to be made. The other Lords Justices concurred.

The Passing of Crosby Hall.

GENERAL regret will be aroused by the announcement that in spite of the efforts of the committee, who have raised, in the short space of six weeks, upwards of £50,000, the negotiations with the directors of the Chartered Bank of India, Australia, and China, concerning the preservation of Crosby Hall have proved abortive, and the destruction of the City's ancient palace will apparently ensue, thereby causing a loss to the nation of one of its most cherished architectural monuments. The Committee, of which Alderman Sir Vezey Strong is chairman, state that the directors of the bank had written definitely declining to allow the time required for the calling by the Lord Mayor of the proposed meeting at the Guildhall, or to approve either of the other two proposals of the committee : the one involving an exchange of sites and the other the question of a building plan being devised, which would admit of Crosby Hall being preserved without prejudice to the accommodation of the bank in the new premises.

The committee express their great regret at the failure of their efforts to give effect to the public wish in respect to the preservation of the historic hall, and " its dedication to the public objects of future usefulness for which it is, by common consent, eminently suited."

Among these uses for the hall, the committee had considered the important suggestion that the Gresham Committee might make use of it for the greater convenience and extension of the Gresham lectures, and the development of the important educational work with which they are concerned. The Gresham Committee includes representatives of the Corporation and the Mercers' Company, both of whom have subscribed to the preservation scheme, and the Provisional Committee had proposed a conference to discuss the matter, but that, like other contemplated arrangements for the future appropriate use of the building, must now be abandoned in view of the directors' decision pointing to its early demolition.

Suggested Legislation.

In a final paragraph the committee state they recognise that " a bitter sense of disappointment must naturally be aroused when it is known that all the efforts and the wishes of so many have proved unavailing to save the famous building, and they would venture to hope that steps will be taken to secure such change in the law, in which this country compares unfavourably with other countries, as will effectually prevent such disappointment and such irreparable loss in the future, by safeguarding the national memorials—as things apart from the merchandise of silver and gold."

Some Dwellers in Crosby Hall.

The Rev. G. Bell Doughty, Rector of St. Peter's-upon-Cornhill, in his paper, read before the Langbourn Ward Club recently, gave some interesting details of the dwellers in Crosby Hall, or Crosbie Place, as it was originally called.

A certain Sir John Crosby who lived in the reign of Edward III., at least one hundred and twenty years before Crosby Hall was built or thought of, was a Knight and Alderman of London, and also held the manor and advowson of Hanworth, in Middlesex, a property which descended to the builder of Crosby Hall, and which he makes mention of in his will. And *our* Sir John Crosby's grandfather and father were both men of note, and attached to the Court.

John Crosby, though he had an excellent patrimony, embarked in trade, and was connected in his enterprises with the Medici family and the Friscobaldis of Florence, the great bankers or money-lenders, and probably negotiated many loans for the King and the nobility. He was a member of the Woolstaplers' and Grocers' Companies, and twice Warden of the Grocers.

In 1466, Crosby was elected one of the four Members of Parliament for the City, in the Court of Common Council. He was also made Auditor of the Bridge House Estates, and in the same year he leased from Dame Alice Ashfield, Prioress of the Convent of St. Helen's, a piece of ground, which had a frontage of 110 ft. in the King's—or Bishoppesgate—Street, at an annual ground rent of £11 6*s.* 8*d.* On this piece of ground he built Crosbie Place, with its noble Banqueting Hall, considered by all authorities to be the finest example of Gothic Domestic Architecture of the Perpendicular Period. Stow says "This house he built of stone and timber, very large and beautiful, the highest at the time in London."

Crosbie Place was finished in 1470, by which time he was an Alderman, and also serving the office of Sheriff.

The next year found him engaged in less peaceful pursuits. It was the occasion of the attack on London by Thomas Nevill—"the Bastard of Falconbridge," as he was called. Crosby, with the Mayor, Aldermen, Citizens and 'Prentice boys, marched to London Bridge to repulse them.

Sir John died in 1475, not quite five years after he built Crosby Hall.— "So short a time" says Stow "enjoyed he that large sumptuous building."

He was twice married, his first wife being called Agnes or Anneys, and the second Anne. By his first wife he had several children who all seem to have died in his lifetime, except one, Johanna Crosby, who married a Talbot.

Sir John Crosby's widow sold Crosby Place to Richard, Duke of Gloucester, "There," says Sir Thomas More, "he lodged himself, and little by little all folks drew unto him, so that the Protector's court was crowded—and the King's left desolate." Crosby Place was the scene of his conspiracies against the lives and fortunes of his brother Clarence, and the Earls Rivers, Grey and Hastings, and there he plotted with Buckingham, Ratcliffe, Catesby and Lovel.

Shakespeare knew Crosby Hall very well. He was an inhabitant of St. Helen's Parish, and in the time of Sir John Spencer and his daughter was probably frequently present at the Masques and Theatricals which took place there at the Queen's

command. In the vestry books of St. Helen's, his name occurs in 1598, in connection with that of Sir John Spencer and other inhabitants, as being assessed for a sum of £5 13*s.* 4*d.* for property held in the parish.

At Crosby Hall, by great protestations of religion and morality Richard won the favour of the Lord Mayor of that time, one Sir William Shaw, and of his brother, Dr. Shaw, the popular preacher at St. Paul's. Richard—" that bottled spider whose deadly web ensnareth," as Shakespeare makes Queen Margaret call him—procured Shaw to preach at Paul's Cross on the sins of Edward IV. and the illegitimacy of his children—the little Princes.

By the help of Buckingham he so won the affection of the Corporation that they waited on him at Crosby Place to offer him the Crown. And again, at Baynard's Castle (at least so Shakespeare says), where it was arranged between Buckingham and himself that he should be found at his devotions.

This acceptance of the crown by Richard Crookback soon left Crosby Place vacant, and we next find it in the possession of Sir Bartholomew Reed, who was Lord Mayor of London in 1501.

During his Mayoralty he entertained the Princess Katherine of Arragon for the two days (Nov. 12th and 13th) before her marriage with Prince Arthur, eldest son of Henry VII., he being fifteen and she nearly sixteen.

Sir John Rest, another Lord Mayor, was the next tenant of Crosby Place. He treated the citizens to one of the finest Lord Mayor's Shows they had ever had, including a real live unicorn ! I wonder where he got it ?

In 1513 Crosby House was taken by one of the most illustrious Englishmen of his century, Sir Thomas More, then thirty-five years of age.

During his first year at Crosby House he wrote the " History of the life and death of King Edward V., and of the usurpation of Richard III.," a practically contemporary history which is of the greatest value in giving an accurate and detailed picture of the times.

At Crosby Hall would be gathered then the greatest minds of the day. Erasmus was a constant visitor. More had made his acquaintance some years before at the Lord Mayor's table, so tradition says, where, being then unknown to each other they got into an argument during dinner, when, in mutual astonishment at each other's wit and readiness, Erasmus exclaimed, *Aut tu es Morus—aut nullus*, and More replied, *Aut tu es Erasmus, aut diabolus.*

In 1519, so busy was More with affairs of State that he had to resign his post of Under-Sheriff and give up his private practice ; and four years after—having in the meantime been appointed Treasurer of the Exchequer and Speaker of the House of Commons—he had to give up Crosby Hall.

He sold it to his faithful friend Antonio Bonvici, a great friend of the Greshams who lived opposite in Bishopsgate Street. He was a merchant of Lucca, and came

of a noble Italian family which had given many cardinals and statesmen to Italy.

Bonvici did not remain long in undisturbed possession of Crosby Hall. The next year, 1536, on the Dissolution of the Monasteries, Henry VIII. confiscated Crosby Hall, with S. Helen's, to the Crown, and Bonvici had to buy it back for £207 18*s.* 4*d.*

Bonvici lived quietly there for another thirteen years, until leaving the country without asking the King's permission, Henry again confiscated Crosby Hall, and gave it to Lord Darcy, who seems to have lived there for a short time. Bonvici, however, returned home—perhaps with a grand consignment of brocades and jewels, for which the King's present "dearest wyeff," Katherine Parr, had a great taste. At any rate Henry forgave him, doubtless for a consideration, and Bonvici remained in peace at Crosby House until the accession of Queen Elizabeth, when, as a noted Romanist, he retired to Louvain, where his house was open to all religious fugitives of his own persuasion. Bonvici left Crosby House to Germayne Cyole, who had married a niece of Sir Thomas Gresham. His wife Cycillia outlived him. She had apparently moved from Crosby House after her husband's death, for she was buried in St. Michael's, Bassishaw.

The next tenant of Crosby Hall was Alderman William Bond, a very rich man, and some time Sheriff of London. He much enlarged the house and built a turret to it. Alderman Bond, as his tomb in St. Helen's tells us, was one of the famous Company of Merchant Adventurers—a company which in those days made the name of England famous both by land and sea. One of his sons who succeeded him at Crosby Hall was Captain Martin Bond, Citizen and Haberdasher. He commanded the City Trained Bands, and was with Queen Elizabeth at Tilbury Fort on that historic occasion when she addressed the troops in 1588.

The Bonds evidently sold Crosby House in 1594—six years after the defeat of the Spanish Armada—to Sir John Spencer, "Rich Spencer," as he was sometimes called.

Sir John bought it for his "Mansion House," for he was Lord Mayor that year, and there were great doings at Crosby House, amongst other festivities a masque was performed there by the gentlemen students of Gray's Inn and the Temple in the presence of Queen Elizabeth and her Court.

Spencer, like Sir Thomas Gresham and other merchant princes of the time, had a country house. His was situated at Canonbury (Canonbury Tower), and he constantly travelled backwards and forwards between the City and Canonbury. His fame as "Rich Spencer" had travelled abroad, and a plot was hatched at Dunkirk to kidnap him for the sake of a heavy ransom. Twelve pirates crossed the Channel and sailed up Barking Creek; six were to remain in charge of the boat and six to waylay him at Islington on his way to Canonbury. But the plan came to naught; something unexpected happened that day; he stayed at Crosby Hall overnight and thus escaped.

Sir John had an only daughter, Mistress Elizabeth Spencer, who gave her hand to a young nobleman, not over well-endowed then, Lord Compton. Their son was Spencer Compton, second Earl of Northampton—and Spencer Comptons they are all to this day, the present Marquis of Northampton and the present Duke of Devonshire, two of the many distinguished descendants of Mistress Elizabeth Spencer, bear that name.

About this time, the Comptons, having other fine mansions (notably Compton Wyniattes, in Warwickshire, that most beautiful old English house in which her descendant entertained the King this year, Castle Ashby, near Northampton, and Canonbury Tower), appear to have lent or let Crosby Hall to Mary Sidney, Countess of Pembroke, who, through her husband, was triply related to them.

Lord Compton, or rather the Earl of Northampton, was still alive then, he not dying until 1630, when Crosby Hall came into the possession of his eldest son, the little Spencer Compton, Queen Elizabeth's godson. He appears to have let part of it, at any rate, to the East India Company, which had been founded just thirty years before in 1600 ; for, in the Churchwardens' Accounts of St. Helen's, 1632, the Company are put down as contributing a sum of £50 to the restoration of the Church, "in respect of their tenancy of Crosbie House." They afterwards gave another £50.

Poor Crosby Hall soon after fell on evil days. Its owner, Spencer Compton, Earl of Northampton, was one of the most devoted and heroic commanders in the Cavalier cause. He fell fighting at the battle of Hopton Heath for King Charles, and four of his sons were distinguished soldiers on the same side. By an irony of fate, their property, Crosby Hall, was turned into a prison for the Royalists.

After the Restoration, and, indeed, for the following one hundred and five years, the Hall proper sheltered the ejected Nonconformist ministers, many most famous and learned men, beginning with the Rev. Thomas Watson, the ejected minister of St. Stephen's, Walbrook, and including amongst them, Dr. Annesly, grandfather of the celebrated John Wesley. The dwelling-house part was evidently occupied by various tenants and in various ways until, in 1831, the whole place was advertised to be sold "for building purposes," when the public spirit of Miss Hackett roused the citizens to the enormity of such a sacrilege, and in 1836 it was reinstated and partly restored by public subscription, being reopened with a banquet by the Lord Mayor Copeland.

Miss Hackett, who died in 1875, most earnestly wished that Crosby Hall should be appropriated to the uses of the Professors under Sir Thomas Gresham's will, but it was not to be.

It would seem likely that this historic building, erected during the reign of Edward IV., will, in the reign of Edward VII., share the fate of many others, and be sacrificed to modern requirements.

Ordinary Meeting.

The Second Ordinary Meeting of The Society of Architects, for the Session, 1907-8, will be held at Staple Inn Buildings (South), Holborn, W.C., on Thursday, December 12th, 1907, at 8 p.m.

Agenda :—

1. The President to take the chair.
2. Minutes of the last Ordinary Meeting.
3. Nominations for Membership.
4. Ballot for the following Candidates.

For Membership :—

Antcliffe. William Charles	5, Clonmel Road, Fulham, S.W.
Byron. Hugh	79, Bushwood, Leytonstone, N.E.
Dunch. Charles	St. Clement's House, St. Clement's Lane, E.C.
Lang. Albert Lancelot	3, Avenue Road, Springrove, Isleworth, W.
Pulford. William James	5, Queen Street, Maldon, Essex.
Smith. Alfred Emmanuel	152, Larkhall Lane, Clapham, S.W.
Smithson. Alfred Hugh	17, Regent Street, Cheltenham.
Woodbridge. Stephen	210, High Street, Brentford.
Williams. Arthur Stanley,	Llandilo.

For Studentship :—

Williams. John Clifford	Glengarry, Kirketon Avenue, Weymouth.

5. Paper on "the Legal Liability of the Architect."
By Mr. Montefiore Brice, Barrister-at-Law.

Publications of The Society of Architects.

Telegrams: "CRYPT, LONDON." **Telephone: 1852 HOLBORN.**

The Journal.—Price 6*d.* monthly. Extra copies may be obtained by Members at 6*d.* post free. Binding cases are supplied at 3*s.*

The Year Book.—Price two shillings, contains particulars of Membership, list of Members and Students, syllabus and copies of past examination papers.

Editorial.—The Editor will be glad to consider short articles, drawings or photographs, for publication, but no payment will be made except by special arrangement, nor will he hold himself responsible for the return of MSS., drawings or photographs.

Advertisements.—All communications respecting advertisements in the Society's publications must be addressed to the Advertisement Manager.

THE
Journal
OF
The Society of Architects
FOUNDED 1884. INCORPORATED 1893.
Including Transactions and Architectural Notes.

No. 3. Vol. I.] JANUARY, 1908. [New Series.

The Society is not, as a body, responsible for the opinions expressed by individual authors and speakers.

State of St. Paul's.

Architect on Danger of Subsidence.

The report of the committee of experts who took evidence as to the condition of St. Paul's Cathedral has, says *The Tribune*, by no means allayed the public agitation on the subject.

Sir Aston Webb and his colleagues, it will be remembered, said that, after mature deliberation and a thorough examination of the Cathedral and its foundations, they were of opinion that, in spite of the settlements to which attention had been called, there was no necessity for any extensive remedial measures to be undertaken. They added, however, the rather disquieting explanation that this conclusion was based on the assumption that the present conditions of the subsoil and the present water level would be maintained, so that in their opinion the structure should be kept under constant observation. As has been wittily said by a writer in the *Architects' Magazine*, St. Paul's was put on its trial on a charge of decreasing stability, and dismissed with a caution.

Mr. T. Stewart Inglis, is one of those who strongly dissent from the findings of the committee. In his opinion the report is unsatisfactory and alarming. Some time ago he put forward a theory as to the cause of the subsidence, and this theory he claims is fully borne out therein.

The more one considers the circumstances, he says, the more one is forced to the conclusion that the making good of the existing fractures in the fabric is of little importance, and, in fact, that the money spent in this manner would be better saved until all movement of the fabric has been stopped, which can only be effected by making the foundations secure and independent of all natural causes affecting them.

His view is this, that so long as water continues to be drawn from the strata under the Cathedral, whether by artificial or natural means, it is almost bound to carry with it the finer particles of sand, with the inevitable result that the strata itself sinks, and therefore the important point is to stop this and thus make the foundations more secure than they ever were. This object, he is confident, could be achieved by the construction of an enclosing wall of concrete. Those who are interested in the matter will find it fully explained in an interesting article over his signature in the last issue of *The Journal of The Society of Architects*.

The R.I.B.A. Secretaryship.

The announcement of the retirement of Mr. W. J. Locke from the Secretaryship of the R.I.B.A. does not come altogether as a surprise to those who have watched with interest his progress in the world of literature during the last few years. What is a loss to the Institute and to the profession generally will be a gain to literature and the drama, as it is with a view to the wider exercise of his talents as a novelist and a play-wright, that he is relinquishing the position which he has filled to the great advantage of the Institute. Mr. Locke was the happy possessor of qualities which enabled him to carry out the duties of his important office to the satisfaction of all concerned, and his place will be difficult to fill.

A Bill for the Registration of Architects.

Prospect of Progress.

This Bill was opposed last session by the Incorporated Association of Municipal and County Engineers, on the ground that one of its clauses was detrimental to the interests of local authorities, and their Engineers and Surveyors. Since then as a result of negociations between representatives of the Association and the Society, the Bill has been amended in detail, while leaving the principal intact, and it will be re-introduced into the next session of Parliament with the support of the Association. In addition to this, many architects have in response to a recent communication from the President of The Society of Architects, expressed their desire to co-operate in the movement, and their willingness to devote time and money in forwarding it. With a little luck in the ballot there is every prospect of progress in the new year.

The Journal, September and October, 1894.

The Secretary will be glad to hear from any member having these parts for disposal. They are required for completing a set for binding.

Proceedings.

THE Second Ordinary Meeting of The Society of Architects for the Session 1907-8 was held at Staple Inn Buildings, Holborn, W.C., on Thursday, December 12th, 1907, at 8 p.m.

MR. G. E. BOND (Vice-President) having taken the chair, the minutes of the previous meeting were read, confirmed and signed.

The following nominations were then announced :—

For Membership :—

ANTHONY. ALBERT EVERSHED, A.M.INST.C.E.,	162, North Street, Brighton.
COX. ARTHUR LINCOLN,	5, The Avenue, Minehead, Somerset.
LEWIN. GEORGE HENRY,	County Education Offices, Northampton.
PEACH. ROBERT EDMUND,	37, Belvoir Street, Leicester.
RUTTER. CHARLES DANIEL,	Parr's Bank Chambers, Wrexham.
SUDBURY. HARRY TATHAM,	Estate Offices, Ilkeston.
TRIGGS. BERNARD GEORGE,	King's Buildings, Bombay.

For Studentship :—

CARTER. CHARLES SHIRLEY,	7, Princes Street, Cowley Road, Oxford.
COOMBS. DONALD WAY,	25, Portman Road, Boscombe, Bournemouth.
HALLIDAY. ERNEST JAMES,	Knowsley Park, Prescot, Lancashire.
HOLDEN. WILLIE,	8, Reevy Road, Wibsey, Bradford.
INGLETON. DELAMARK FRANK,	41, Machen Place, Cardiff.
JENKINS. ALBERT HENRY,	Blackmill, near Bridgend.
PAURUCKER. FRANK LAWRENCE,	Highland Villa, Cole Hill, Worcester.
SHELBOURN. EDWARD PICCAVER,	16, Park Road, Melton Mowbray.
STEWART. HAROLD FREDERICK,	Jesmond, Green Lane, Wavertree, Liverpool.
STONER. ARTHUR PHILLIP,	Arrochar, Dyke Road, Preston, Brighton.

The ballot was then taken and the following candidates were declared to be duly elected :—

As Members :—

ANTCLIFFE. WILLIAM CHARLES,	5, Clonmel Road, Fulham, S.W.
BYRON. HUGH,	79, Bushwood, Leytonstone, N.E.
DUNCH. CHARLES,	St. Clement's House, St. Clement's Lane, E.C.
LANG. ALBERT LANCELOT,	3, Avenue Road, Springrove, Isleworth, W.
PULFORD. WILLIAM JAMES,	5, Queen Street, Maldon, Essex.
SMITH. ALFRED EMMANUEL,	152, Larkhall Lane, Clapham, S.W.
SMITHSON. ALFRED HUGH,	17, Regent Street, Cheltenham.
WILLIAMS. ARTHUR STANLEY,	Llandilo.
WOODBRIDGE. STEPHEN,	210, High Street, Brentford.

As a Student :—

WILLIAMS. JOHN CLIFFORD,	Glengarry, Kirleton Avenue, Weymouth.

MR. MONTEFIORE BRICE, Barrister-at-Law, then read a paper on "The Legal Liability of the Architect."

MR. ELLIS MARSLAND (Hon. Secretary), in proposing a vote of thanks to Mr. Brice, said the paper was one for reference rather than discussion. The duties and responsibilities of an architect appeared to be so great that he thought many of them would have stopped short long ago had they known what they were going to be liable for. The matter was a serious one considering the number of people with only sufficient money to buy a brass plate who were so anxious to rush into their

profession. The architect, unlike the lawyer, had no one to fall back upon. The latter could protect himself by taking counsel's opinion, whereas the former had to bear the full brunt of these duties and responsibilities of which they had heard. The question of getting some relief from these responsibilities was one which the Council of the Society might very well take up. With all these liabilities heaped on the head of the architect it showed the great need there was for Registration. Regarding the termination of the contract by the death of the employer, he asked whether the architect could claim payment for his work up to the time of the employer's death, supposing he had got as far as the completion of the drawings and specification. If so would he be bound to deliver up his drawings and specifications as in the case of *Gibbon* v. *Pease*. Mr. Brice had said they were liable to properly examine the site of a projected building before commencing operations and he asked who should pay for that examination, was it expected that the architect should include it in his fees, or was he entitled to charge the employer with the cost. It had not been his custom to charge his clients with the expense he had been put to on this account.

Mr. Percy B. Tubbs, f.r.i.b.a., in seconding the vote of thanks agreed with Mr. Marsland, that, instead of taking up Architecture, had they known of the liabilities awaiting them when they entered the profession many of them would have turned their attention to something else. The paper would prove a most useful reference for the client to the persecution of the architect.

Mr. Morse Hewitt (Solicitor) was very glad to see that the Society had such a very able exponent of the liabilities of the architect. Seeing that the liabilities were so enormous in number it was of great importance that every architect should be fully awakened to them. He hoped that members of their profession would not keep Mr. Brice's paper on their bookshelves but on their table as it was more useful as a memorandum than as a reference.

Mr. C. H. Mead said the word "drawings" should be used in preference to "plans" because the latter did not include elevation and sections. He also thought that in these days of cheap literature it did not always do to assume the ignorance of a client on building matters. A tremendous fuss has been made over the case of *Gibbon* v. *Pease*, and the ownership of the architects' drawings and specification, but he thought there was not much in it after all, it was a matter of arrangement with the client. With regard to the liability of the architect to examine the site, he instanced a case where much expense had been incurred in this way. Mr. Mead concluded by asking whether an architect could act as a valuer if he did not possess a valuer's license.

Mr. Walter C. Williams (Solicitor) said it was stated that an architect was entitled to a lien on his drawings for his fees and he was not liable to an action if he detained them while asking for an unreasonable price. He could not see how an

unreasonable price *could* be recovered. Again, where rights of way and water were touched upon, he saw that the architect was bound to find out whether a proposed building interfered with the right of way, but how was he, as an architect, to find that out? Was the lecturer quite sure that the liability under the Statute of Limitations was only for six years, or was there not some extra time allowed for the consequence of the neglect to be discovered. Speaking off-hand he thought that more than six years was allowed if the result of the negligence had not been apparent during that time.

Mr. Henry Adams, M.Inst.C.E., said he was not aware that any "particular body" was "authorised to control and govern the profession." Further on he read "Anyone who holds himself out as an architect . . . is required by law to possess an ordinary and reasonable amount of skill." He thought that the question of skill should not stop at the mere possession, but that it should be exercised. With regard to the giving up of plans and specifications he thought very few owners would wish to have them. Was it the blue prints they wanted, or the pencil sketches? and in the case of the specification, was it the pencil draft which went to the quantity surveyor, or the lithographed specifications which had to be given up? He had always refused to give up his drawings and in many cases he was able to say that there were no originals, the final plans being "prints." With regard to the death of either the employer or the architect, Mr. Brice's remarks read as though the whole work then came to an end although the building might, perhaps, be half-way up. With regard to the liability of the architect to "give all notices and pay all fees" he thought the Building Act put it upon the contractor and not upon the architect. As to the time limit for obtaining tenders it had been his experience that a building owner usually took a long time to make up his mind as to what he really did want and then required everything completed and the tenders in at once. Again, he thought it had often been the case that an architect rectified his own mistakes and charged it as an extra, although Mr. Brice said that the architect was responsible if he certified "for charges for his own omissions or neglect." It was remarkable that an architect should not be liable for anything happening while the owner was pulling down his own house and he would like to know whether this was intended. With regard to valuations he had always understood that anyone making a valuation for the use of one person only has not to take out a licence, but only when the valuation or appraisement is to be binding between two parties. On the question of liability for a damage that had not happened, he could not see how an architect could be held responsible.

Mr. J. R. Manning said he understood that the builder, if working himself, became the servant of the building owner, and it would be as well if this fact was pointed out to the client and that he should know his liability in relation thereto, so that proper provision could be made by way of insurance against any accident which might befall his employés. Mr. Manning called attention to a case at

Cardiff, where a man employed to do some white-washing fell and injured a rib and obtained compensation to the extent of 10/- per week. His advice to his clients was to insure against this sort of thing.

Col. Leslie, r.e., recalled the pleasant times they had in the rooms of the Society during the time when Mr. Brice was its Secretary and he (the speaker) was a member of the Council. Somebody had suggested that it was time they sought for relief from some of the responsibilities under which they laboured, and he thought Mr. Brice could help them there.

Mr. Marsland thought he ought to explain, in reply to Mr. Mead's remark about "plans," that Mr. Brice had consulted him in drafting his paper, and he found that in the body of the Act relating thereto the definition of the word "plans" was "Plans, Elevations and Sections," which was the reason that Mr. Brice had used the term instead of defining "plans" and "elevations," etc.

Mr. G. E. Bond (Vice-President) said they were all exceedingly obliged to Mr. Brice for his paper, and, like Mr. Marsland, on first thoughts he felt that they had an undue share of responsibilities. Subsequent reflection, however, enable him to view the situation less seriously and to see that in the majority of cases the liabilities or responsibilities placed upon them were only such as they might reasonably expect under common law, and were not peculiar to the profession but were equally applicable to every ignorant or negligent member of any other profession or calling. He was sure that what Mr. Brice had told them that evening they would take to heart, but it would be better still if Mr. Brice could show them how they might be relieved of some of their undesirable responsibilities.

Mr. A. Montefiore Brice, replying to the questions raised, said the point as to whether upon the death of the employer, the architect could recover his fees for work done up to that period, and whether he must deliver up his drawings, depended upon the contract itself. If an architect entered into a contract with an employer to do certain work, and to make the work complete for a certain sum, in law he was not entitled to be paid until the whole job was completed, but in practice the usual custom was for him to be paid from time to time or at different stages of the work. In that case it could be assumed that he would be paid on *quantum meruit*. If required, on being paid, to deliver up all drawings used—executed as it were—up to that date, he must do so, because the implied contract was that included in the fee charged, whatever it might be, were the drawings, which were part of the work specially done to the order of the employer, and as soon as the work was done these drawings became the employer's as much as the building. He need not, however, deliver up drawings for work not executed, because he would not have been paid for them.

Should the architect pay for the examination of the site and charge the amount to the client ? That was a rather curious point. Architects had fixed charges, and

though he did not know the opinion of the profession on the question he thought it was, from a legal point of view, unfortunate. Scheduled charges in a profession were not binding upon persons who were not members of that profession. They might be as between architect and architect, possibly between architect and builder, but certainly not between architect and employer, unless the latter had such notice of them as would make it obvious to a third person that the employer knew what the charges were. A case had occurred the other day in his own profession in connection with some fees as between solicitor and client, and the layman could not be expected to know what was due from the solicitor to a barrister or *vice versâ*.

Architects had their scale of charges repudiated over and over again in the Courts, on the ground that the ordinary public could not know what were the professional charges. In every case the charge must be a reasonable one, and in some cases this was a great deal more than the fixed charge. Solicitors would be very glad indeed to draft their bills on a different principle, but are obliged to conform to the scale by Act of Parliament. It did not differentiate between a solicitor without brains and one with ; all were allowed to charge the same fees. If an architect did not include everything in assessing his fees for carrying out a job that was his own look-out.

With regard to Mr. Mead's reference to the word "plans," Mr. Marsland had explained that.

With regard to a valuer's licence, if an architect made a valuation for two or more persons with different interests he must have a valuer's licence.

Mr. Adams had dealt with the question and was correct in saying that a licence must be taken out when the valuation was to be binding between two parties. When an architect was asked the value of a plot of land, for instance, he might give an approximate value, but such valuation was not a valuation in the ordinary sense of the word ; he was simply asked by his client to use his knowledge and skill.

Mr. Henry Adams interposing, said some members were not quite clear as to valuations for mortgage. They were usually made for the use of the mortgagee in determining whether the property was worth the mortgage asked for.

Mr. Brice pointed out that where an architect could legally advise on the value of a piece of land without taking out a valuer's licence, was in giving a valuation to guide his client in determining whether or not he should consider the developing of the land. But if the valuation was to be obligatory or binding upon two parties with opposing interests, whether it was to be so binding by agreement or the operation of law, then the person making that valuation would become a valuer in the sense that he should take out a valuer's licence.

With regard to Mr. Williams' queries he ought perhaps to apologise for his English rather than for his law. He ought to have said that an architect was not liable for holding to his plans while demanding an unreasonable price, although he subsequently accepted a reasonable price. That is to say, when he established

his claim to a price at all he could not be mulcted in damages for holding his drawings while making an unreasonable demand.

With regard to the question of right of way across a site the architect could not, of course, be expected to know whether there was or not, but it was his duty to put his employer upon his guard on that point, and so enable him to make enquiries in time.

Mr. Williams had also queried his remarks upon the Statute of Limitations as to the architect remaining liable for negligence under the Statute for a term of six years, and whether the term did not begin to run when the negligence was discovered, as the architect would escape liability if the negligence was not discovered until, say, the ninth year. He was of opinion that it did not, except in the case of fraud, and even in that case, then only from the moment when the fraud could, by using reasonable diligence, have been discovered by the person defrauded.

With regard to Mr. Adams' statement that there was no "particular body" authorised to govern the profession, he was not alluding to the Institute, but meant to exclude all existing architectural bodies. In the case of surgeons or physicians every man was governed by his respective college, whereas an architect was not controlled by any particular body.

Mr. Adams had also said that his remarks read as though the whole of the work came to a stand-still in the case of an employer's death. As a matter of practice fresh contracts were entered into, but the contract between the architect and employer must be determined by the death of the latter. In the case of a contractor he could proceed against the legal representatives of the employer, but an architect could not. A contractor was not an agent, and could go on and finish the work; whereas the architect *was* an agent, and his liabilities as such ended when the agency was revoked by the death of the employer.

With regard to a time limit for obtaining tenders, he could not speak as an architect, but as a lawyer he had met with cases in which the employer had told the architect to get in tenders within a certain time, and his failure to do so may involve him in a serious liability.

In the case of an architect superintending the pulling down of a house, it was his duty to use all reasonable care. It had been held that when a person was pulling down his own house the architect, his agent, was not liable—not as towards any passer-by, but as to damage to the adjoining house, if that house were a modern one.

With regard to Mr. Manning's remarks concerning the new Compensation Act and the employer's liability in the case of contractors working for themselves, it all depended upon whether there was a contract of service. Each case was decided upon its own merits, and depended upon the relationship between master and man.

Mr. Brice, in conclusion, thanked the Chairman, the members of the Council, and the whole meeting for their reception of his paper.

The London Building Acts (Amendment) Act, 1905.

Fire Escapes, Section 12.

This Act only affects London, but the principles embodied in it may shortly be adopted in the chief provincial cities and towns, and eventually throughout the United Kingdom. Last year the Local Government Board issued Model By-Laws requiring means of escape from fire in factories and workshops, for the purpose of enabling District Councils to adopt and enforce them, therefore the following remarks may be found to be equally interesting to our Provincial as to our London members.

Section 12 of the above mentioned Act, in dealing with means of access to roofs, requires that every existing building except the dwelling house occupied as such by not more than two families, and every new building if having more than two storeys above the ground storey, or exceeding 30 ft. in height, must be provided by the owner with access to the roof, which, if in the form of a trap-door must be covered with copper or zinc, hung on hinges and furnished with a counterweight and a step-ladder leading to the roof.

Briefly, this section requires that all trap-doors must be made to open automatically, and that a step-ladder to allow of escape must be permanently fixed so that it cannot be taken away.

One of our members (Mr. E. J. Sadgrove) has invented an apparatus which undoubtedly fulfils the requirements of Section 12 in so far as it relates to trap-doors. We have seen the apparatus, which has few working parts and is so simple that it could not readily get out of order or fail to work at the critical moment.

The apparatus can be applied to the ordinary average trap-door without any alterations, and it is quite immaterial whether the trap is in a sloping or flat roof.

There is one important point which should not be overlooked in connection with these trap-door fire escapes. Directly the trap-door is open, the staircase becomes a flue and increases or intensifies the fire, therefore any apparatus which prevents the door being quickly closed cannot be so good as one that facilitates that operation. Mr. Sadgrove seems to have covered all these points in his excellent invention.

There are many buildings in London alone which come within the scope of this Section, but apart from that, persons not legally bound to equip their business premises or residences with automatic-escapes would probably be inclined to do so where the cost is small compared with the advantages. The name given to Mr. Sadgrove's invention is the "Bafeco," and it is supplied by The Building Acts Fire Escape Company, 4, Southampton Row, London, W.C.

The Legal Liability of the Architect.

By A. MONTEFIORE BRICE,

Of the Middle Temple and the Oxford Circuit, Barrister-at-Law.

Contents.

Introductory.
I. The Architect's Relation to the Building Owner:
(*a*) As Adviser.
(*b*) As Designer.
(*c*) As Supervisor and Agent.
II. The Architect's Relation to the Contractor.
III. The Architect's Relation to Public Authority.
IV. The Architect's Relation to Adjoining Owners and others.
V. The Architect as Valuer and Arbitrator.
VI. The Duration of his Liability.

AT the present time the architect belongs to what is called an open profession. That is to say, in order to practise as an architect, a person is not required by law to comply with the regulations of any particular body authorised to control and govern the profession, or to fulfil any statutory requirement whatsoever. Any man, at any moment, may hold himself out as an architect, ready to draft plans and supervise their execution for any member of the public.

But, although the law imposes upon such a person no preliminary course of education or test of knowledge—as in the case of a solicitor or a surgeon, it does not contemplate, nor does it permit, the practice of the profession by an ignorant, unskilled person with impunity. Anyone who holds himself out as an architect, and practises as such for reward, is required by the law to exercise an ordinary and reasonable amount of skill in his profession; whatever work he may undertake to do, he is expected by the law to display the requisite amount of knowledge in a reasonable degree, and to do his work with such proper care and such due diligence as would be held reasonably sufficient by the average experienced architect; and if he fail in these or in one of these, there follows on his failure a legal liability which may operate in several ways—such as rendering him unable to recover his fees, or making him liable to be sued for damages for his incompetence.* This is a liability which the law, when put in motion, does not hesitate to maintain.

* *Columbus Co.* v. *Clowes* (1903), 1 K.B.D., 244.

Now, the functions of an architect are so complex and so manifold that while it is of great importance to him to be capable of performing them, it is of still greater advantage to his welfare that he should realise the duties and obligations which they severally impose upon him. Putting it very broadly, an architect may be employed merely as an adviser, or as a designer, or as agent for the building owner, or—which is more usual—as all three together. He may further be employed as valuer or dispute preventer between the contractor and the owner, or, lastly, as arbitrator. But it is more particularly as adviser, designer and agent of the building owner that an architect, *qua* architect, is employed, and this employment is multifarious enough to exhaust the activities of the majority of those practising the profession. For, amongst other duties, the architect has to advise his employer on the land upon which it is proposed to build, both with regard to any legal restrictions lying upon it, and to its suitability for the purpose contemplated; it is his duty to examine the soil with care, both the actual building site and its environment; he must draft his plans, and draft them in accord with his employer's wishes and in regard to the actual conditions of the building site, and on receiving authority to proceed with the contemplated work must elaborate his drawings and plans in strict and full compliance with the scope of his authority; he must in similar compliance obtain all necessary tenders and prepare all building contracts required; and, when the work begins, he must supply the builder with all proper information; oversee the work and supervise the workmanship, and generally, as agent for his employer and within the limits of his appointment as such, see that the contract is being carried out in strict accordance with all its terms and conditions. Here, indeed, are formidable requisitions upon his professional skill; but even if he can answer them all with full technical capacity there is something more to be demanded of him. For there is attached to each of them the additional incubus of a legal liability. The architect, indeed, must walk warily, for every step in his progress through a contract is hedged about with duties and obligations which are legal in character and are capable of being legally enforced or of being expressed in legal damages.

In considering the various aspects of this legal liability, it will be convenient to regard the architect in all his various relationships, and consequently his liability may be now discussed, first, in his relation to his employer; second, in his relation to the contractor; third, in his relation to public authority; and, fourth, in his relation to adjoining owners and others.

And, first,

I. In his Relation to the Building Owner or Employer.

This relationship is severable into three distinct kinds and capacities, the first being that of a mere adviser; the second that of an independent contractor merely

called upon to design and prepare good building plans; and the third being that of both designer and supervisor as the agent of the employer or building owner, a stage which commences as soon as he receives instructions from the building owner to prepare plans or to obtain tenders or to get the contemplated work or any portion of it carried out.

(a) As Adviser.

An architect may be, and frequently is, called in merely to advise a person contemplating the erection or alteration of a building. As an architect he holds himself out as possessing the necessary knowledge and practical skill, and as willing to exercise all reasonable care in giving such advice.* He must exhibit these in all the matters on which he may be properly consulted—such, for example, as the limitations on the use of land on which it may be proposed to build, the nature of the soil, the plans and drawings, the obtaining of tenders, the preparation of contracts, the cost of the proposed work and the like. But there are limits to his liability. For example, while he will be required to show a correct knowledge of the general or local Acts and bye-laws affecting the work on which he is asked to advise, he is not expected to give the advice which a lawyer would give, and should he be so misguided as to give legal advice to his client and his client be so adventurous as to follow that advice to his own detriment, the architect would not be liable for such advice. He is not a lawyer, nor does he hold himself out as one.

(b) As Designer.

In his character as the designer, the architect contracts to supply drawings and a specification which shall be executed with reasonable care and skill, and, further, shall be capable of being carried out. And the skill has been held to embrace and include judgment, for Bayley, J., pointed out in *Duncan* v. *Blundell*,† that :—

"Where a person is employed in a work of skill, the employer buys both his labour and his judgment. He ought not to undertake the work if it cannot succeed, and he should know whether it will or not."

But this skill and this judgment need not be of the highest order, for it is sufficient in all cases where professional skill is sought and rendered for reward that the skill should be of a reasonably competent character. It is not evidence against the architect that some architects, of far greater experience or ability, might have used a greater degree of skill, or, indeed, even a greater degree of care. The true test is whether the skill was so deficient or the care was so defective that a bad result became inevitable. This test was held to be the true one by Chief Justice Erle, in *Rich* v. *Pierpont*.‡

* *Lanphier and Wife* v. *Phipos* (1831), 8 C. & P., 475; *Jenkins* v. *Betham* (1854), 15 C.B., 168; *Turner* v. *Goulden* (1873), L.R. 9 C.P., 57; *Leliévre* v *Gould* (1893), 1 Q.B.D. 491, 496.

† (1820) 3 Stark, N.P., 6.

‡ (1862) 3 F. and F., 35.

It was long since held that if the architect should ignore the rules of his art it might be regarded as proof of unskilfulness,* but this does not include any personal predilections for a peculiar or a novel treatment or any idiosyncrasy of style, provided that the work so conceived is feasible. On the other hand, his plans, in addition to complying with the requirements and instructions of the building owner or employer, must also comply with the various statutory and other regulations affecting such buildings as he may have agreed to design; must observe all legal restrictions, whether public or private, which relate to the use of the contemplated site; and must not permit a building to be defective in structural strength and construction.

Further, if an architect is requested by the building owner to furnish estimates of the probable cost of the designs and plans he has drawn, it is incumbent on him to act with honesty and skill in so estimating. Chief Justice Best held in *Moneypenny* v. *Hartland*,† that a man should not estimate a work at a price at which he would not contract for it, for if he does he deceives his employer; and he would be further liable if by negligence he omitted details which would necessitate an additional order or a further contract. In this case he would be liable to the building owner, not for the cost of the additional work, but for damages for having negligently induced the owner to engage in a more expensive undertaking than he had intended. The case of *Moneypenny* v. *Hartland*, cited above, is the authority for this.

It may be generally laid down that whenever an architect, by want of skill or care, advises the owner that a building will cost considerably less than it in fact does, he loses the right to recover his fees and at the same time becomes liable to an action for damages by the owner. The disparity between the estimated and actual cost must be so considerable as to be evidence of the want of care or skill; and, of course, any estimate made at the request of the owner from mere sketches and undetailed instructions cannot be regarded as warranted to be exact. Moreover, the matter may be referable to the contract between the owner and the architect —was a condition expressed (or can it be implied) that the estimate should be reasonably accurate? For example, if the architect is requested to furnish drawings and plans for a building, the cost of which is not to exceed a certain sum, and he furnishes designs incapable of being executed for that sum, he cannot recover his fees. For he warrants technical skill and is bound to exercise care.‡

Even if the owner approves the drawings and specification of the architect, such approval will not of necessity remove the liability of the architect for any technical

* *Slater* v. *Baker and Stapleton* (1767), 2 Wils., 359.

† (1826) 2 C. and P., 378.

‡ *Flannagan* v. *Mate* (1876), 2 Vict. L.R. 157, and see *Moneypenny* v. *Hartland* (1828), 2 C. and P., 378; *Whitty* v. *Dillon* (1860), 2 F. and F., 67; *Nelson* v. *Spooner* (1861), 2 F. and F., 613.

defects in them, for it is obvious that the owner must usually be incapable of forming a judgment upon such matters. This was decided in *Smith* v. *Barton*,* where the employer was held to be incompetent to judge of the accuracy and skill of the drawings and specification submitted by the architect. There is always present an implied undertaking by the architect that the plans have been made with all proper professional care and skill.

In the absence of an express agreement to the contrary, it is the duty of the architect to deliver up his drawings and specification upon the payment of his fees. The allegation of a custom to the contrary is no defence to the demand of the building owner for the plans.† Should there be no contract as to price and he should demand and be refused an unreasonable price, he is entitled to retain his lien on his drawings while he sues for his price, and if the price recovered be a reasonable price, the architect is not liable in damages to the owner for the retention of the plans while demanding an unreasonable price.‡ The architect is bound to deliver all the drawings and the specification.

Finally, if an architect is only requested to supply drawings and the specification, and is not engaged to supervise the actual work, his liability to the building owner is limited to the drawings and specification prepared. Apart from them, he is not liable for any damage or defect which may arise in connection with the progress of a work over which he has no control. But should the building owner mention to the architect while preparing the plans that a certain course is likely to be taken, and should that course be, in the circumstances, impossible or injurious or undesirable, the onus of pointing out this fact to the owner rests with the architect, and the failure to do so may disentitle him to his fees or render him liable to an action for damages, and the same would apply to the case where the owner overrules the architect's judgment or insists on his own views being carried out in opposition to those of the architect. The latter may or may not comply with the owner's demands, but should he comply it becomes his duty to point out to the owner the probable consequences of doing so.‖

(c) As Designer and Supervisor and Agent to the Building Owner.

The architect incurs further and serious liability to the building owner or employer as soon as he agrees, in addition to preparing drawings and specification, to superintend the carrying out of these drawings and the specification by a builder. From the date of that agreement until the work is complete, the architect becomes and remains, with one or two exceptions mentioned below, the constituted agent of the building owner, and expressly liable as such. The exceptions to this duration

* (1866) 15 L.T. (N.S.), 294.
† *Gibbon* v. *Pease* (1905), 1 K.B.D., 810.
‡ *Hughes* v. *Lenny and Croft* (1839), 5 M. and W., 183.
‖ *Duncan* v. *Blundell* (1820), 3 Starkie, N.P., 6.

of the contract are induced by illness and death. If an architect contracts an illness incapacitating him for a prolonged period, his employer is not obliged to wait until he recovers, if such waiting would prejudicially affect the employer's interests. If the architect or the employer die, such death also terminates the contract; for, as regards the architect, his employment is for his personal services, and arises out of his capacity and the confidence that is felt in him; and, as regards the employer, the architect is acting as his agent, and the death of a principal puts an end to an agent's employment.*

The duration of the contract between building owner and architect may also be terminated by the architect committing a breach of it and his consequent dismissal by the employer; he may also, of course, be wrongfully dismissed at any time. If wrongfully dismissed the architect cannot bring an action to obtain specific performance of the contract between him and his employer, nor can he obtain an injunction to restrain his employer from employing another architect; for a contract of agency is always revocable, and in the case of an architect his services are personal. His only remedy is an action for damages.†

The liability of the architect who has been engaged both as designer and superviser of the execution of the plans he has designed may now be considered briefly, and it will be convenient to take his chief duties and obligations in the following order :—

(1) The consideration of all possible limitations on the use of the proposed site and character of the projected building.
(2) The examination of the site and soil.
(3) The preparation of the plans, working drawings, and specification.
(4) The estimate of the cost of their execution.
(5) The obtaining of tenders.
(6) The preparation of the building contract.
(7) The supervision of the work, and the performance of his duties imposed by the contract.

(1) The possible limitations on the use of the proposed site are generally legal limitations. Thus the erection of a building on a site may interfere with the rights of adjoining owners entitled to access to that site, or the character and position of the building as planned by the architect may be an infringement of certain Acts, whether general or local, or of certain bye-laws and regulations with which it is the duty of the architect to make himself familiar. Ignorance of these may lead to his client suffering damage—he may be fined or the building he has erected may be pulled down,‡ or the frontage may have to be set back. For such damage the building

* *Tracey* v. *McCabe* (1893), 32 L.R., Ir., 21; *Wentworth* v. *Cock* (1839), 10 A. and E., 42.
† *Brett* v. *East India and London Shipping Co., Ltd.*, 2 H. and M., 404; *Chinnock* v. *Sainsbury*, 3 L.T., 258.
‡ *Hopkins* v. *Smethwick Local Board* (1890), 59 L.J., Q.B., 250.

owner would have redress against the architect, for if it is not expressly agreed, it is agreed by implication that the architect will make the plans in accordance with the law. A limitation to this occurs when the law is so altered between the making of the plans and the completion of the building as to render the building illegal. In this case the architect would escape liability.

Further, the architect is liable for the proper submission of the plans to the various public authorities, and for the proper giving of the necessary notices to all concerned. Nor does the architect escape his liability by delegating this duty to an assistant or the contractor, for (1) as a delegate himself he cannot, generally speaking, delegate his duties—on the principle of *delegatus non potest delegare*—and (2) if he does so delegate his duty, he is still bound to see that it is duly performed.

So, too, with his duty to adjoining owners at this stage of his work. He is liable to the building owner for any damage that person may sustain or become liable to sustain by reason of his architect's interference with such private property as the easements of air or light, or water or way, or with party walls or rights to support, or reservation of minerals. In some instances he must observe special care, *e.g.*, in the case of party walls, which are not subject to any general Act, but are governed by numerous local bye-laws and regulations, or the common law rights of the adjoining owner.

These and similar matters impose a serious liability on an architect, and he would be indeed ill-advised to place a building on a site without first assuring himself that his right to do so is perfect. Any carelessness in this matter, for example, might lead to his erecting his building, or a portion of it, upon another's freehold, and the consequences of that would be (1) an action for trespass against the architect; (2) the appropriation or destruction of the building, or an action for damages against the building owner by the landowner; and (3) an action for damages against the architect by the building owner.

The liability of the architect for trespass—or a nuisance—rests on the legal principle that in *tort* the fact of agency does not excuse. Every individual concerned in inflicting a wrong is himself answerable for the wrong.* The building owner and the architect would be equally personally liable to an action for damages, but the architect has his remedy over against his client for any damage he may suffer, if he can prove that, while he exercised all due diligence, he was himself deceived by the negligence or misrepresentation of his client.

(2) The examination of the site and soil constitutes a further liability on the architect. He may delegate the work, but he cannot divest himself of his own responsibility. He must use all diligence and skill necessary to show whether the site and soil are in all particulars suitable for the building he proposes to place on

* *Mill* v. *Hawker* (1875), L.R. 10 Ex., 92.

them, and the subsoil as well as the surface ground must be ascertained and then considered in relation to the projected building. It was held in a famous case* that if the foundations for a building prove to be bad, and the architect has failed to make a proper examination of the nature of the soil, he could not recover his fees. He would also be liable to an action for damages. The same liability would attach to him when building upon existing foundations : for it is his duty to examine them and if necessary test them to prove their suitability for the building to be placed upon them.

(3) In preparing the plans, working drawings and specification the architect impliedly undertakes that they shall be in accordance with the instructions received from his client, that they are in no way defective, that they comply with all statutory and other public regulations, and that they do not impair any rights existing in the proposed site.

Thus, even if the employer's instructions are complied with and the plans meet with his unqualified approval, the architect is still liable for any defects of a constructional nature that may be latent in the plans, for the employer is not as a rule competent to detect these.†

The architect is under a further liability to supply the contractor with all necessary drawings and the specification, in accordance with the specified contract time or at the proper time, as the case may be. But before he can be held liable to his client for damages in this respect, he is entitled to receive a demand for the required plans from the contractor,‡ for the owner could not suffer damage by the delay in supplying the plans if the builder were not ready to work from them. In the event of the architect being in default in delivering drawings at the proper time, the architect may be sued by the employer, according to the circumstances, for damages for breach of contract or negligence, and the damages would relate to loss of profits due to delay in completion, to loss sustained by the employer through the builder either repudiating the contract or obtaining damages from the employer for his agent's delay, or to the penalties for delay which the employer has had to forego.

The architect, further, is liable for all omissions he may make in his drawings which involve additional work or new contracts, and he is also liable for all inaccuracies, omissions and unnecessary additions in his quantities, should he see fit to take these out. But it may be mentioned in respect of this, that it is not usual for a building owner to warrant quantities, and in such a case the architect, his agent, has no authority to do so on his behalf.

Further instances of the architect's liability with regard to drawings and plans are dealt with in section B, where the architect is considered as a Designer.

* *Moneypenny* v. *Hartland* (1826), 2 C. and P., 378.
† *Smith* v. *Barton* (1866), 15 L.T. (N.S.), 294.
‡ *Stevens* v. *Taylor*, 2 F. and F., 419, 421.

(4) In estimating the cost of the execution of the drawings and specification he has made, the architect contracts a further liability. He must possess the necessary professional knowledge and skill, and exercise the necessary care and diligence to render his estimate of price a reasonable one. If he fails to make such a reasonable estimate, he cannot sue successfully for his fees and he may render himself liable to an action for damages. The circumstances of each case must be relied upon to provide evidence as to whether an estimate is reasonable or not. Chief Justice Best held in the leading case of *Moneypenny* v. *Hartland*,* that if a person by an inaccurate estimate induces another to undertake a work which, in the event of the real cost being represented to him, he would not have undertaken, the person furnishing the inaccurate estimate is not entitled to recover his fees. The architect, of course, should require the fullest instructions and information, and, failing these, should notify his client that he can only vouch for the reasonable accuracy of his estimate in the special circumstances. Further, the situation may, and sometimes does, arise that there is neither an express or implied contract that the estimate shall be reasonably accurate.† It may be repeated here, too, that an architect is not entitled to recover his fees in respect of designs which could not be executed within the limit of the sum fixed for the cost of the building.‡

(5) In obtaining tenders for the building owner, the architect is usually bound by a time limit, and his failure to obtain such tenders within the prescribed time may involve him in a serious liability. Forfeiture of land through not building on it within a specified time, loss of the building season, loss of profits from the building are amongst the damage which may accrue to the building owner and rebound on to the architect. The information given to those who tender must be reasonably accurate, and any fraud or misrepresentation by the owner with the architect's knowledge or by the architect himself will render him liable to an action for damages. On the other hand, it must be borne in mind that there is usually no warranty to the contractor that drawings are accurate or practicable, and the onus of discovering this rests on the contractor.‖

Should the architect accept tenders without the authority of his employer, the acceptance will not be valid : it is void *ab initio*. But if the employer subsequently confirms the acceptance by his agent, then that acceptance does not date from the time of confirmation by the employer, but it refers back to the time when the architect made his unauthorised acceptance.§ But the ratification by the employer is to be made within a reasonable time, and Lord Justice Fry held in *Metropolitan Asylums*

* (1828) 2 C. and P., 378.
† *Nelson* v. *Spooner* (1861), 2 F. and F., 613.
‡ *Flannagan* v *Mate* (1876), 2 Vict. L.R., 157.
‖ *Thorn* v. *Mayor of London* (1876), 1 App. Cas., 120.
§ *Bolton Partners* v. *Lambert* (1889), 41 Ch. D., 295, C.A.

Board v. *Kingham*,* that such time could not extend till after the date at which the contract is to commence.

(6) In preparing the building contract, the architect enters upon a duty fraught with liability. It is true that he does not, *quâ* architect, hold himself out to be a lawyer; but in matters which come within the scope of his employment as an architect he must be cognisant of the law, and in matters which are beyond the range of architectural knowledge and are legal in character he must warn his client of the same and suggest or prescribe the taking of legal opinion.

But there are many things which he must know and must regard at his peril. He is obliged to know, for example, the ordinary conditions which are included in a building contract; he is obliged to see that they are there in order that his principal may be protected. But he is not obliged to warrant that the language in which they are expressed constitutes in law a binding agreement. The construction and interpretation of a contract and the determination of the precise meaning of its language are legal functions, and the architect would be exceeding his duty to warrant these, and if he did warrant them he would do so at his peril.

It is his duty, however, to be cognisant of the law. It is not his business to know the legal conditions which determine when a building contract need not be in writing, but it is his business to know that grave risks may attend a building contract which is not in writing and advise his client accordingly. He may not be required to determine when a person is an "adjoining owner" or not, but it is his business to know that a person may or may not be an "adjoining owner."

So the professional knowledge which he holds out and the care which he impliedly undertakes to use require him to observe all proper caution in considering the person or persons with whom or for whom a contract may be made. It is his duty to know that liability may or may not attach to certain contractors under given circumstances —such as in the case of Government departments, public servants, local authorities, corporations, companies, church building and club committees. In each case it is his duty to warn his client that special legal difficulties surround contracts made with such bodies, though it is not his duty to decide in any particular case what is the true legal course to pursue. His knowledge of law, in fact, must be knowledge of the point of contact between law and the practice of architecture, but it is not bound to include a knowledge of the result of that contact. Consequently, the prudent architect will submit his contract to the test of legal opinion before advising his client to adopt it.

(7) In supervising the work and performing the duties imposed on him by the contract, the architect will be under a special liability to his employer. It is not usual that there should be a separate contract between architect and building owner, because, in the absence of such a contract there is always an implied contract that

* (1890) 6 Times L.R., 217.

he is obliged to render skilled service in return for the agreed reward,* and, moreover, the contract between the building owner and the builder or contractor, which has in a very special sense been brought to the notice of the architect seeing that he has drawn it up, usually sets out both the authority and the obligations of the architect; and while he is not in the ordinary legal sense of the term a " party " to that contract, it is generally the only instrument which authorises him to act as agent for the building owner, and at the same time sets out the limit of his authority, and the extent of his duties in reference to the subject matter of the contract.

Included in the proper supervision of a building which is being carried out from its architect's or even another architect's plans, are the duties to inspect as often as necessary both materials employed and work done; to give all necessary instructions and make all necessary corrections; to provide the contractor at the proper time with the requisite drawings, plans and specification; to measure up the work accurately; to certify correctly for all proper charges including penalties enforceable by the contract; to allow only those extras and variations which an express term of the contract or his powers under the contract permit, and generally to see that the terms of the contract are fully and faithfully complied with.

In supervising the carrying out of the contract, the architect must not forget his duty to his client. He is the agent or servant of that client and it is good law that no understanding, and no payment are permissible between the contractor and the architect, unless the employer of the architect is aware of it and an assenting party. Any service which an architect may render a builder should be done as an act on behalf of his employer. He may not for payment take out quantities or supply drawings for the builder in order that the builder may do the agreed work, nor may he receive commission from the manufacturers or vendors of any materials or appliances whatsoever, provided that the employer is ignorant of the arrangement. Dismissal without notice is the liability upon the architect for any infringement of this rule.

Either as breaches of contract or as constituting negligence, the architect readily becomes liable for a great number and variety of acts which are in the course of his duty when supervising the performance of the contract. His employer, for example, can bring an action for damages against him if he fails to inspect the work properly; and if a work has been completed and does not comply with the contract, because at a certain stage of the work the architect passed as sound that which was unsound, the employer is entitled to proceed against the architect and to recover from him any additional cost which the tardy discovery of the defect might have involved.† But the employer is estopped by the act of his agent from recovering

* *Rogers* v. *James* (1891), 8 Times L.R., 67.

† *In re Trent and Humber Compy., Ex parte Cambrian Steam Packet Compy.* (1868), L.R. 6 Eq., 396, 410.

from the contractor a larger sum than it would have cost to set right the defect had it been discovered by the architect using due diligence.

Other acts of negligence or breaches of contract consist of failure to measure up work or measure it properly; failure to certify properly—such as certifying for charges for his own omissions or neglect, and for extras as due when not due; certifying for moneys or materials which are really forfeited under a re-entry clause; certifying for money not due and for charges which are incorrect or improper; certifying for work not complying with the terms of the contract, and the like. It should be remembered that even if extras are so necessary as to be indispensable to enable a contract to be completed, this does not justify an architect to certify for them unless he has (1) power under the contract to order such extras as he thinks fit, or (2) the authority of the building owner to allow the extras in question. Any extra or any alteration which is made by the builder without the permission of the building owner or the properly exercised authority of the architect is not recoverable by the builder or certifiable by the architect.

II. In his Relation to the Contractor.

The relations of the architect to the contractor are simply those he may maintain in his capacity as agent to the building owner, and as long as he acts within the limits of his authority he cannot incur any personal liability to the contractor. Even if he acts improperly or negligently while exercising his rightful authority, he is not liable to the contractor for any loss which may follow from his actions. Where an architect was sued by a builder for negligently certifying for a much less sum than was properly payable to the builder, it was held that no action lay.*

But directly an architect exceeds the authority conferred on him by the building owner and inflicts damage on the contractor, then the contractor can successfully maintain an action for damages against the architect. On the other hand, the contractor is a party to the building contract which defines the scope and limits of the authority conferred on the architect, and in order to succeed the contractor will be required to prove that he had been deceived as to the extension or alteration of the architect's authority, or temporary or total removal of the limiting clauses of which he had such undoubted notice.

The architect, in such a case, is liable to be sued, not, of course, for breach of contract, but for damages for breach of warranty of authority,† and, if so, it does not matter whether he did so exceed his authority innocently or with knowledge.

The architect is not liable to the contractor for any defect in his drawings and specification which may make them unpracticable, for he does not impliedly warrant

* *Stevenson* v. *Watson* (1879), 4 C.P.D., 148.

† *Richardson* v. *Williamson and Lawson* (1870), L.R. 6 Q.B., 276.

their practicability.* If he chooses to warrant them expressly, in one capacity or another, then he would become liable should they fail in any capacity for which they have been warranted. Nor does he impliedly warrant any calculations or any estimates which he may compute when acting within the scope of his employment; but if the contract is based on these inaccurate calculations it is open to the contractor, if he exercise due diligence, to bring an action for the rescission of his contract and in that case the architect incurs a liability to his client for any damages that may thereupon accrue.

It must be remembered that there is no privity of contract between architect and builder; the architect is at no time a party to the building contract; and nothing short of an express undertaking by the architect can render him, when acting within his authority, liable to the builder.

But if the architect commit a *tort*—that is to say, is guilty of a wrong to others—he may readily become liable to the contractor. If while a building is being erected, an injury occurs to the public, the contractor is suable and is generally sued; but if the injury resulted from an act ordered by the architect, he in his turn becomes liable to the contractor, and if the architect had not exceeded his authority in ordering the act, the building owner would also be liable.† Thus if a building in the course of construction, through defective planning, fell down upon a person and injured him, then an action would lie against the contractor by the person aggrieved, and against the architect by the contractor. If the employer, with due notice, had authorised the defective planning, an action also would lie against him. But the architect has no action against his principal; there is, indeed, no question of agency in *tort*: all persons who take part in the doing of a wrong are personally liable for the consequences of their wrong-doing. And in the event of an architect acting fraudulently towards the contractor he would be liable to an action of deceit, whether his employer had been a party to the act or not.

III. In his Relation to Public Authorities.

The obligation on the architect to know where the law comes into contact with the practice of his profession, exposes him to a liability to public authorities as well as to his client. With certain exceptions, his relationship to public authorities is not different from his relationship to private individuals, and it will be shown later that with these he may readily contract serious liability.

There is, however, a special liability to public authorities; but it is not of a general or onerous nature, because the various Building Acts do not impose their penal clauses upon the architect, but upon the builder or the occupier or the owner.

* *Thorn* v. *Mayor of London* (1874), L.R. 9 Ex., 163.
† *Jolliffe* v. *Woodhouse* (1894), 10 T.L.R., 553.

Still, the architect remains liable to public authorities and bodies for any fraud or trespass or negligence which he may commit to their detriment, and under 52 and 53 Vict. c. 69 (Public Bodies Corrupt Practices Act, 1889), he is specially liable for any corruption when holding office under a public body. Again, 38 and 39 Vict. c. 55 (The Public Health Act, 1875) and its amending Acts; 56 and 57 Vict. c. 73 (Local Government Act, 1894), and many local Acts impose on architects liability to penal actions for corrupt practices.

On the other hand, when employed by a public body, he may escape a liability which would remain upon him if employed by a private individual. Thus, it is a good defence for an architect when so employed to set up that certain wrongful acts done or omissions made were done or made in the execution of the statute under which the public body was at the time acting, and done or made *bona fide*; or he may have a simpler defence in the fact that the statute under which the public body was acting includes a clause to render these acts legal.* The latter defence is also open to the architect when acting for a private employer.†

IV. In his Relation to Adjoining Owners and others.

The architect will be liable in damages to adjoining owners and others whenever they suffer injury or damage from his acts or from acts authorised by him or from acts which are done in an improper manner authorised by him.

These acts are generally connected with trespass—such as the building upon a stranger's land, and damage to reserved minerals; or they arise out of the perpetration of a nuisance—such as interference with a right-of-way or common or with the right to water, air, light, or support; or are due to negligence on the part of the architect or on the part of those authorised by him to do or leave undone certain acts.

If an architect through failure to make proper enquiries, or failure to put the building owner himself upon enquiry, should inadvertently place his building or a portion of it upon an adjoining owner's land, he at once becomes liable to that adjoining owner in an action for damages on account of trespass, and, as stated above,‡ he renders his employer liable to have the building appropriated or destroyed by the adjoining owner or to an action for damages by him; and the architect further becomes liable to an action by his client.

Trespass may be of the slightest character to become actionable: the driving of a nail, for example, into another person's wall.‖ And consequently it is of

* *Ward* v. *Lee* (1857), 7 E. and B., 426.
† *Truman* v. *London, Brighton and S.C. Rlwy.* (1885), 11 App. Cas., 45.
‡ See supra p. 7.
‖ *Lawrence* v. *Obee* (1815), 1 Stark, 22.

importance that the architect should act warily when he is likely to commit any invasion of a definite corporeal right of property; and he should remember that it is not necessary, to support an action of trespass, to allege any actual damage. That the damage is trifling is no defence, and the trespasser cannot shield himself behind the old legal maxim: "De minimis non curat lex." And although in certain cases, and for certain purposes, a person may have a license given by law to enter upon another's land, yet if that person subsequently so misuses his right as to abuse it, then he becomes liable for his actions and his entry is converted into a trespass and dates back to his original entry on the land. The subsequent act is held to show the intention with which he originally entered.*

So with the interference of rights enjoyed by other persons. Here again the old legal maxim: "Sic utere tuo ut alienum non lædas," applies specially to the architect. He must do nothing on the site upon which he is building which may damage those outside it. Whatever he brings there—such as water or solid substances—he must keep there at his peril: if water come there unhelped by him, he is not bound to keep it in, but he may not, except at his peril, use any means to send it away.† He is, in fact, responsible, together with all other persons who assist or assent, for any damage arising from water, filth, fire, or any noxious thing which he has caused or allowed to pass from his land on to another's; for any damage to another's right to support caused by the excavation of his own site; for any damage arising from the improper use of a natural stream—he may not even bank his land against the ordinary flooding of a stream if this shall send more water on his neighbour's land;‡ and for any interference with or obstruction of every kind of easement and profit *à prendre.*

The architect, however, can limit his liability in this respect by showing that his breach of any duty imposed on him by law is really due to the act of God, the king's enemies, or some other kinds of *vis major.* An act of God is due to natural causes directly and exclusively, without human intervention, and such that it could not have been prevented by any amount of foresight and pains and care reasonably to be expected,‖ and it belongs to that class of casualty which is occasioned by the elementary forces of nature—*e.g.*, earthquake, storm, flood, lightning, but not fire unless caused by lightning. The king's enemies means foreign enemies, and they are included because the person in law liable for the wrong committed no default and has no remedy over against those who did the wrong. And other *vis major* would include an inevitable accident in respect of which the person ordinarily liable would have no remedy over. Thus, where the rain water from a roof was collected by gutters into a box and a rat gnawed a hole in the box and without any negligence

* *Six Carpenters' Case* (1610), pt. 8 Rep., 146 b., p. 432.
† *Whalley* v. *Lancashire and Yorkshire R.-Co.* (1884), 13 Q.B.D., 131.
‡ *Menzies* v. *Breadalbane* (1828), 3 Bli. N.R., 414.
‖ *Per Mellish, L. J., Nugent* v. *Smith* (1876), 1 C.P.D., 444.

of the defendant the rain water flowed through the hole and flooded the premises of the plaintiff, it was held that the accident amounted to *vis major*.

So, too, with negligence. What is negligence ? The late Baron Alderson held that it is an omission to do something which a reasonable man, guided upon those considerations which ordinarily regulate the conduct of human affairs, would do ; or doing something which a prudent and reasonable man would not do.* But mere omission is not actionable unless a duty is imposed on the person omitting. Responsibility and obligation must precede it ; and the damage arising from it must be proximate and flow directly from it. Given these, the absence of due care constitutes legal negligence and may be expressed in damages and other remedies.

Thus, if an architect designs without due care a building which wholly or partially falls down and injures a passer-by, the architect is liable to an action for damages for his *tort* or wrong ; if he lowers or raises a weight, the duty is cast upon him to take all reasonable care, whether he does so above a public road or private ground, as long as he knows or should know that persons may be passing below ; but on the other hand, it has been held that a person pulling down his own house (and similarly an architect when superintending the work), is under no duty to take care as towards the owner of a modern adjoining house.†

All these liabilities may and often do arise in connection not only with private persons, but, as has been shown, in connection also with ownership or occupation by companies, corporations, public bodies and public authorities. Similarly, the liability is not confined to the architect, but extends to all and every person concerned in doing the wrong ; and as a rule, action is taken against the building owner or the contractor, rather than against the architect.

Further liability attaches to the architect in respect of any frauds committed by him, either singly or in conjunction with others ; or in respect of libel, slander, malicious prosecution and other wrongs ; and, obviously, of course, in respect of any offence, misdemeanour or felony which he, either singly or associated with others, may commit. But the view taken here of the legal liability of the architect does not include liabilities which do not properly arise within the practice of his profession, and as a consequence these more serious matters may well be left untreated.

V. As Valuer and Arbitrator.

There remains the liability of the architect as valuer or as dispute-preventer or as arbitrator or quasi-arbitrator.

The distinction between valuation and arbitration or quasi-arbitration is, briefly, the difference between a process which reaches a decision by the exercise of special

* *Blyth* v. *Birmingham Waterworks Co.* (1856), 11 Ex., 784.
† *Chadwick* v. *Trower* (1839), 6 Bing. N.C., 1.

knowledge and skill, and a proceeding which reaches a decision on the balance of evidence tendered at an inquiry. The former process is of the nature of an appraisement, and the latter has that of a judicial proceeding. In building contracts the former is intended to prevent disputes arising, and the latter to settle them when they have arisen.

The question of the architect's liability as a valuer depends upon the facts of the case. If he has contracted to value and this duty is not separable from his position as architect, or is separable from his judicial position as quasi-arbitrator or arbitrator, then he becomes liable to his client for any want of knowledge, care or skill which he may display.* He undertook for reward that he was competent to discharge this duty and it is for the breach of this undertaking that he is liable to be sued. As valuer, too, he is obliged to take out an annual license costing £2, renewable on July 6th, in each year, and the penal clause of the Inland Revenue Regulation Act† prescribes a forfeiture of £50 for appraising or valuing without such license. A valuation by an unlicensed valuer has no force.

But an architect may act as a valuer in a judicial sense, and, as such, no liability, save for fraud, collusion and the like, would attach to his valuation. If the building contract constituted him a valuer for the purpose of determining a question between two or more parties—such, for example, as the quality of materials or work or the amount of money due to the contractor—he is a valuer in a judicial sense, and is not liable for any want of knowledge, care, or skill which he may display. He is really, as quasi-arbitrator, acting for both parties and Chief Baron Kelly held in *Pappa* v. *Rose*,‡ that it is for the parties themselves to see that the person in whose judgment they confide shall possess the requisite skill to exercise it properly. If, however, while giving his certificate upon his valuation as to the amount of money due to the builder, the architect should act negligently, the building owner is not necessarily concluded from proceeding against the architect for his negligence.‖ In the case of *Rogers* v. *James*, it was contended that the architect could not be held liable for negligence when acting as arbitrator, but it was decided that under the building contract in question his decision was only final as between the building owner and the builder and that the building owner was not stopped from proceeding against the architect. The clause under which the architect acted as arbitrator gave him no power to bind the building owner as against himself.

A dispute-preventer may or may not be an arbitrator. If his function is to decide a question by the use of his own knowledge and skill, he is not an arbitrator :

* *Jenkins* v. *Betham* (1854), 15 C.B., 168.
† 53 and 54 Vict. C. 21, S. 21 (1).
‡ (1871), L.R. 7 C.P. 32, 525.
‖ *Rogers* v. *James*, 8 Times L.R., 67, and see Hudson on Building Contracts, vol. 2, p. 185, 3rd Ed.

if he is asked to decide by holding an enquiry and basing his decision on the facts then brought to his notice, he is an arbitrator. In building contracts, however, his duty is not to determine disputes but to prevent them arising, and in that capacity he is a valuer. As Lord Esher held in a well-known case,* " If a man is, on account of his skill in such matters, appointed to make a valuation in such a manner that in making it he may, in accordance with the appointment, decide solely by the use of his eyes, his knowledge and his skill, he is not acting judicially ; he is using the skill of a valuer, not of a judge. In the same way, if two persons are appointed for a similar purpose they are not arbitrators, but only valuers." And the same great lawyer held that where a person is appointed to ascertain some matter for the purpose of preventing differences from arising—not of settling them when they have arisen—it is a case of a mere valuation.† If in such a case he holds himself out as a valuer, he is liable for any ignorance, negligence, or want of skill he may show ; if he is selected by both parties to act as valuer on account of the confidence they repose in his knowledge or judgment, he is not responsible, except for fraud and the like, to either—they must abide by their choice ; but if he is an arbitrator and his appointment is wide enough, he is liable for nothing but fraud, collusion, corruption, partiality and the like misconduct.

An arbitrator is liable to be removed if he has been guilty of misconduct which would be ground for setting aside his award, when made. Such misconduct would include fraud, corruption, partiality, and any circumstance which would be inconsistent with judicial impartiality. If he act honestly no action will lie against him for want of care or skill or negligence.

VI. The Duration of Liability.

The liability of the architect does not cease with the completion of the contract he has been employed to superintend. Under the Statute of Limitations,‡ he remains liable for negligence for the full term of six years from the date of the act of negligence, and he has been held so liable even though the damage had not yet accrued. Obviously the discovery of a defect in a building may be greatly postponed, but, nevertheless, this fact does not extend the duration of the architect's liability. Nor does the fact that an architect is appointed by the contract the sole judge and arbitrator in all questions of dispute, and that he decides any given question, conclude the building owner from an action against the architect on that question, though such decision may be and is final as regards the builder.‖

* *In re Dawdy and Hartcup* (1886), 53 L.T., 800.
† *re Carus-Wilson and Greene* (1887), 18 Q.B.D., 7.
‡ 21 Jac. 1. c. 16.
‖ *Rogers* v. *James* (1891), 8 Times L.R., 67; Hudson's Building Contracts, vol. 2, p. 113, 2nd Ed.

In the case of trespass by or authorised by the architect—such, for example, as an excavation under an adjoining house—the Statute of Limitations would run, not from the date of the trespass, but for six years from the occurrence of any damage. It was held in *Mitchell* v. *Darley Main Colliery Co.*,* that each successive subsidence gives a fresh cause of action. Lord Bowen pointed out in that case that a fresh action may be brought as each fresh subsidence occurs, although the successive subsidences are due to the same excavation; for when the excavation has once been made and the adjoining land is kept in an unsupported state, there is "not merely an original act the results of which remain, but a state of things continued."†

It should be added that the architect's liability is much reduced in point of time, should he be superintending work under a public authority. The Public Authorities Protection Act of 1893,‡ enacts that an action, prosecution or proceeding shall not lie or be instituted "unless it is commenced within six months next after the act, neglect, or default complained of, or, in case of a continuance of injury or damage, within six months next after the ceasing thereof." It was held in *Crumbie* v. *Wallsend Local Board*,‖ with reference to a somewhat similar but less precise provision in the Public Health Act of 1875,§ that on the authority of *Darley Main Colliery Co.* v. *Mitchell* (see *supra*) a further subsidence which took place within the six months before action constituted a distinct cause of action in respect of which the action was maintainable, and this led to the repealing of the section in question, and to the substitution of the more definite clause in the Public Authorities Protection Act of 1893. But while this limits the liability of the architect in the great majority of cases to a period of six months, it still leaves, in certain cases, a liability for a longer and, in one instance at least, an indeterminate period.

Architectural and Topographical Society.

A Society has been formed under the title of "The Architectural and Topographical Society," with a view to making a complete architectural survey of Great Britain and Ireland.

Architects, antiquaries, and others interested in ancient buildings and cognate matters, such as local heraldry, are invited to address enquiries to: R. H. L. Cock, 2, Tregunter Road, South Kensington; C. Hall, 25, Mackenzie Road, Beckenham; C. O'Brien, "Commonside," Shalford, Guildford; or, W. Travers, 33, Old Queen Street, Westminster.

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* (1886), 11 App. Cas., 127.
† *Darley Main Colliery Co.* v. *Mitchell* (1884), 154 Q.B.D., 138.
‡ 56 and 57 Vict. c. 61, sec. 1.
‖ (1891), 1 Q.B.D., 503.
§ 38 and 39 Vict. c. 55, s. 264 (now repealed).

The Society of Architects, South African Branch.

Annual General Meeting of Members.

The First Annual General Meeting of Members of the South African Branch was held at Provident Buildings, Johannesburg, at the Rooms of the Transvaal Institute of Architects (by kind permission of the Institute), on Monday, the 18th November, 1907, at 5 p.m. Mr. J. F. Beardwood, Acting President, occupied the chair, and there were present, Messrs. Harry Clayton, Harris, Cope Christie, Wellman and Waugh, members, and Mr. W. Parkin, student.

Mr. Harry Clayton was elected Auditor for the past year's accounts (1906-7), which were presented and adopted.

The Chairman presented the Report for the past year.

The election of Officers and Committee resulted as follows :—President, J. F. Beardwood; Hon. Treas., Harry Clayton; Hon. Sec., E. H. Waugh; Committee, M. Harris, and E. J. Wellman.

An Account for Advertising was presented and passed (£1).

Mr. G. N. Snowden of Klerksdorp, was approved for admission as a student.

The following addition to Branch Rules was approved :—

Insert after first paragraph, "and all Local Honorary Secretaries in South Africa shall be *ex-officio* members of Committee of the Branch during their tenure of such office."

A vote of thanks to the Transvaal Institute of Architects was passed for use of rooms, and a donation of £1 to Library Funds of that Institute was approved.

Mr. J. A. Cope Christie moved and Mr. J. F. Beardwood seconded :—

"That this meeting of members of the Society of Architects hereby affirm the principle of the registration of architects, and pledges itself to assist in the movement for legislative enactment to secure this object in the Transvaal and in South Africa, and directs that this resolution be communicated to the other architectural bodies in South Africa."

Carried unanimously.

A vote of thanks to the Chairman concluded the proceedings.

Annual Report for the Financial Year 1906-1907.

Your Committee have pleasure in presenting a Statement of your financial position for the year just closed : they believe that, considering the short time that the South African Branch of your Society has been in existence, that this will be found satisfactory.

During the year, aided largely by your late lamented President, much earnest work has been effected by your Committee. An intimate relationship has been established with the parent body, and adopting the course so successfully followed by it, your Branch has been placed upon a satisfactory working basis.

The rules of The Society of Architects, London, have been adopted, with such modifications and additions as local circumstances dictated; and these have been approved of by the London Council.

Before proceeding further, you are asked to place on record your appreciation of the untiring interest taken in the well-being of your Society by our late lamented President, Mr. William Leck, and an expression of sincere regret for the unspeakable loss sustained by his untimely demise on the 10th of August last. As was befitting, a wreath was placed upon the grave of the departed in the name of the Society, and a letter of condolence sent in your name to Mrs. Leck. A similar letter was sent in due course by the Council of the Society at London.

We started our Branch with a membership of nineteen and two students, which numbers have been since increased to twenty-eight members and four students.

Had it not been for the continued state of depression which in a special manner affected our profession, there is little room for doubt but that our numbers would have increased to a greater extent. This opinion is strengthened by the large number of enquiries relative to the Society's work and ends.

Your Committee met on the following dates :—December 18th, December 21st, March 16th, May 10th, and September 5th.

At the last-named meeting, it was decided to hold qualifying examinations in December of each year, commencing with 1907, and a Board of Examiners was then appointed as follows :—

Section I.	(a) Planning and Design ..	E. A. WELLMAN (M.)
	(b) History of Architecture ..	W. LECK (M.), F.R.I.B.A. *Pres.*
,, II.	(a) Building Construction ..	J. F. BEARDWOOD (M.), *Hon. Treas.*
	(b) Materials	G. W. NICOLAY (M.)
,, III.	(a) Specifications	D. LEWIS (M.)
	(b) Contracts	REG. G. KIRBY (M.), A.R.I.B.A., *Local Hon. Sec. P'Maritzburg.*
	(c) Quantities	M. J. HARRIS (M.)
,, IV.	Sanitation	E. H. WAUGH (M.), *Hon. Sec.*

At a meeting of the Board of Examiners, held on January 23rd of this year, the examination papers were presented and provisionally approved. These were afterwards submitted to the London Council and adopted.

The examinations will take place simultaneously in Johannesburg, Pietermaritzburg and Capetown, on the 18th, 19th, and 20th December, next. Several entries have been made and the fees paid. The date for receiving applications for these examinations expires to-day (18th November). The entrance fee is four guineas, but applicants who have failed in this are charged a fee of two guineas for all subsequent attempts.

In this connection, Students are reminded that in May of this year and henceforth, the Yearly Scholarship of £10 will be open to articled pupils and assistants who are under nineteen years old at date of examination.

During the coming year, correspondence classes, worked from London, will also be instituted.

It is hoped that these advantages will be largely availed of.

Mr. Harry Clayton (member) has kindly consented to fill the place rendered vacant on the Board of Examiners, owing to the death of Mr. Leck.

To prevent misconception, this opportunity is taken to state emphatically, that in establishing a Branch of its Society in the Transvaal, The Society of Architects has no intention of engaging in competition with existing local bodies: its aim is rather to compass conjointly with them the attainment of that common goal for which, against heavy odds, it has been long struggling—A Registration Bill.

This objective has practically formed the *raison d'etre* of the parent Society, which by the earnestness and dogged pertinacity of its members seems to be at last within measurable distance of attaining the fulfilment of its cherished hope. The vote in favour of Registration passed at a meeting of the Congress of Architects, recently held in London, is a strong evidence that the Society's labours have not been in vain.

Before closing this Report, a hearty vote of thanks is hereby tendered to the respected firm of Leck, Emley & Dickson, for having so generously placed their offices at the disposal of the Society for its various meetings.

Statement of Account for 1906-7.

1907.		£	s.	d.
May 17.	E. H. Waugh, Petty Cash	1	17	11
,,	Bank Cheque Book ..	0	3	0
,,	E. H. Adlington & Co. ..	1	2	6
,,	W. S. Cowell, Ipswich, Bill of Exchange ..	1	18	6
,,	Bank Charge on last	0	1	0
Sept. 11.	I. A. Hobkirk for Wreath	3	3	0
	Balance in hand	20	2	1
		£28	8	0

1907.		£	s.	d.
Apl. 20.	A. H. Bailey, Entrance Fees	4	4	0
May 17.	Society of Architects of London (Refund of Fees)	20	0	0
July 5.	G. F. W. Edmanson Entrance Fees	4	4	0
		£28	8	0

By Cash on Hand £20 2 1

J. F. BEARDWOOD,
Hon. Treas., 1906-7.

Adopted at First Annual General Meeting, on Nov. 18th, 1907.
EDWARD H. WAUGH,
Hon. Sec. S. A. Branch.

Examined and found correct,
HARRY CLAYTON,
18th November, 1907.

Correspondence.

To the Editor of "The Journal."

Door Making.

SIR,—In looking through the December issue of *The Journal of The Society of Architects*, I was astonished to read the following (Doors, page 66, lines three and four) :—" the internal doors are to be put together with best town glue, and the *external doors with paint.*" Is a student to understand that these latter doors are held together with paint ? I venture to think a little honest criticism is good for us all, at all times, therefore it will, perhaps, be digested by the writer of these examination papers, for the benefit of the Society.

72, Finsbury Pavement, E.C. I am, Sir, yours, &c.,
December 6th, 1907. ALBERT C. FREEMAN.

SIR,—In reply to Mr. Freeman's letter containing some strictures on my answer to question 4, Section III., Subject *a.*, Specifications, in the S.A. Examinations in October last, *re* external doors.

The word " paint " is accurate and intentional, and was suggested to me by the answer of at least *one* of the candidates. I always like to recognise thoughtfulness in their answers, and to adopt a good suggestion as a reward ; and though perhaps nine out of ten architects would not adopt this method of putting the doors together, it certainly has its advantages. It has long been good practice to use paint instead of glue for work exposed to the external influences—as rain or dampness—like gates, coach-house doors, skylights, etc., the reason being that glue is affected by damp and softens ; while paint hardens and is not affected ; its holding properties when dry and hard are quite equal to glue ; then why not use it for external doors. Moreover, I knew there was excellent authority for it in the standard books on the subject : the following are a few extracts.

Nicholson, page 449.—" To make a good *glue* for external work grind as much white lead with linseed oil as will just make the liquid of a whitish colour and strong, but not thick."

Gwylt, page 980.—" Good *glue* for external work is made by grinding as much white lead with linseed oil as will just make the liquid of a whitish colour and strong, but not thick."

Rivington's Notes on Building Construction. Part I., page 170.—" The interior of all joints for *outside* work should be painted over with white lead ground in linseed oil ; those for *inside* with glue."

Farrow's Specifications for Building Works, page 49.—" External work to be put together in white lead."

A reference to *Bartholomew's Specifications*, page 552, would enforce the objections against using glue especially for external work—he says, " a good door needs none," *i.e.*, glue.

I trust I have said enough to show that, though Mr. Freeman may differ in opinion from me on this matter, the provision made in the Specification is not the result of negligence or inadvertence, but was adopted after due consideration as the means most likely to produce the best work in this situation.

32, Tweedy Road,
Bromley, Kent.
December 10th, 1907.

I remain,
Yours very faithfully,
W. R. MALLETT.

The Legal Liability of the Architect.

SIR,—With reference to Mr. Montefiore Brice's paper on "The Legal Liability of the Architect," which he read before The Society of Architects, on Thursday last, I should like to offer a few remarks on one or two important points for the consideration of the members of the Society.

That the paper is of considerable importance and full of interest every reader will admit, despite the fact that there is nothing cheerful or comforting in it, and I am sure every member is deeply indebted to Mr. Brice for showing in such a lucid manner what the real position of the architect is in regard to the risk he runs of being bombarded with Law Actions.

There is nothing ambiguous in Mr. Brice's remarks, and he uses language we all can understand.

Without quibbling over phrases, I think one point of the utmost importance for the architect to consider is the meaning of the words *Proper Supervision*. Only a few days ago, an action was taken by a client against the architect as well as the builder in respect of damage which was alleged to have been occasioned through some damp penetrating a wall. As I understand it there was no imputation on the architect's character or ability; his plans, specifications, and general directions exhibited proper professional skill, a Clerk-of-Works was employed on the job, and so far as the published report goes, there was no imputation against the builder that could be called a deliberate intention to evade the conditions of the contract, and yet a defect appears in the Building which might easily be the result of accident, or even the act of a revengeful workman; but yet the *Architect* is made liable. One can understand that the builder should be responsible for the acts of his workmen, but to make the architect liable seems monstrous and iniquitous. It appears that when an architect specifies anything he automatically guarantees that it shall appear in the Building *exactly as specified*, and in order to see that this is carried out he must "*properly supervise the work.*"

To reconcile the Judgment with the published facts of the Action above mentioned, it seems that the legal meaning of *proper supervision* may be interpreted

as follows :—The architect must be first on the job in the morning, he must stay there the whole of the day closely watching the work, and also the movements of every workman, and he must be the last to leave at the end of the day so as to be certain that no one remains who would be likely to cause mischief during the night. Even after all those precautions he could not be sure that he had made himself proof against an action for damages, for should any defect appear within six years afterwards, he would be held liable for it. Now, how can an architect devote his undivided attention to one job for 5 per cent. commission, and how can he under the present state of the Law be engaged upon more than one job at a time ? Strictly speaking, he should not, yet of course he does, and takes the risk. It is not an uncommon occurrence for an architect to have more than one job going on at the same time, and I have heard it whispered that some have even more. We have to be thankful that clients are not all of the unjust type.

Now that we have diagnosed the disease, the remedy must be discovered, it will never do to continue trusting to luck, for who knows whose turn will come next on the list for slaughter, and what with cheap literature and facilities for acquiring information, clients are better acquainted with their remedies against architects to-day, than they were years ago. The thing to be done is to define clearly what "*proper supervision*" by an architect means, and restrict his liability to reasonable limits, and then insist on it becoming one of the conditions of his employment in every case without exception ; it might perhaps be convenient to insert it in the "scale of charges" published by the Institute (and adopted by the Society), which some of us take the precaution of submitting to our clients when taking instructions to save misunderstanding afterwards, but that would be a matter of detail ; or as an alternative, Insurance might be resorted to, for which of course the employer would have to pay. Anyway, he could have the choice, but if he would not have either, then I would say, such a client is not worth having, for it might be taken for granted that he is not blessed with the bump of fairness, and trouble for the architect will sooner or later be the certain result. In due course this subject will come before the Council of the Society, and there is no doubt it will receive the most careful consideration, so if any member wishes to make any suggestion on the matter, I shall be pleased to hear from him.

There is another point which I consider is also a serious grievance, viz., the Ownership of the Drawings. According to the Law as it stands to-day, the drawings are the property of the employer—everything, every sketch, every tracing, and every note made by the architect for the purposes of carrying out his client's wishes and instructions for the job for which he is engaged must be delivered up to the employer at the completion of the work. Fortunately, the majority of clients are just and fair, and have no use for the documents ; but history tells us they are not all alike ;

as an example, take a client of extreme views who demands and receives every scrap relating to his job, and later on sets up a claim for damages against his late architect for negligence (which might be a most trivial affair), or some other iniquitous pretext, the architect would certainly be at a disadvantage as he has nothing but his memory to refer to, and should his defence require documentary support he would be put to the expense of paying for copies of the very documents he had originally prepared; surely that is an injustice to the architect, and yet it might easily happen.

Take another example, an architect designs and erects a residence and exhibits exceptional merit *in every way*; he is paid in due course, and delivers up all designs and details of every description in strict conformity with the Law, and in conscientious fulfilment of his obligations thereunder. His client may unfortunately be of the smart and unscrupulous type. Now what is to prevent the client from reproducing that particular building elsewhere *ad lib*, or of selling those plans to another person without even so much as giving a passing thought to the architect. Where does the architect come in? He is paid for services in respect of *one building only* and has the mortification of seeing possibly hundreds of others reproduced from his original design; is not that a most unfair and iniquitous state of things? There is no misunderstanding what Mr. Brice says about it; he amplified his lecture on that particular point by stating that drawings included specifications, details, rough sketches, notes, and in fact, every scrap of paper and information which the architect prepared and used for the purpose of erecting the building for which he had been employed and paid.

The architect must be protected not only as regards the ownership of drawings and the limitation of his personal liability, but also on other points which arise out of Mr. Brice's paper, and the way to do it is for the architectural profession to co-operate to this end. "*The Society of Architects*" will I feel sure go thoroughly into this matter for the benefit of its members. They have been instrumental in ventilating the responsibilities of the architect, as evidenced by Mr. Brice's valuable address, and they will if possible find the remedy. They are equally sincere in their effort to obtain an Act of Parliament for the compulsory Registration of Architects. We have not an imaginary bogey to deal with, for the enemy is actually at the gates; it is less than a week ago that the case I have referred to, wherein the architect was mulcted in damages, was heard.

We must present a united front and rout the enemy. Unity is strength, let those architects who can qualify for membership (and there are a very large number who can) join *The Society of Architects* without delay, and we will promise them we will do our best to defeat this enemy.

The architect's position should be placed on a foundation of rock, not quicksand, where it now is. What architect can say, when he finds himself compelled to resort

to the Law Courts to recover his fees, that he meets with that fair consideration to which he is entitled. The Law somehow seems prejudiced against him, and tells him very plainly that it does not recognise his scale of charges, and so he usually gets about half what he is justly entitled to. The architect will never receive proper respect or fair treatment until he has got an Act of Parliament at his back.

Yours faithfully,

EDWIN J. SADGROVE.

4, Southampton Row, W.C.,
16*th December*, 1907.

Donations and Gifts to the Library.

The Hon. Librarian acknowledges with many thanks the receipt of the following donations and gifts to the Library.

W. H. Brown (Member)	£1	1	0
W. F. Foster ,, ...	1	1	0
J. E. Gerrard ,, ...	1	1	0
P. A. Jolly .. ,, ...	1	1	0
H. C. Chevalier ,, ...	0	10	6
E. S. Curram ,, ...	0	10	6

BOOKS PRESENTED:—

TITLE.	PRESENTED BY.
Architects' and Surveyors' Directory and Referendum ..	A. C. FREEMAN.
Art and Craft of Garden Making (*Mawson*)	B. T. BATSFORD.
Essentials in Architecture (*Belcher*)	,, ,,
Short History of Renaissance Architecture in England (*Blomfield*)	,, ,,
English Shop Fronts, Old and New (*Dan & Willmott*) ..	,, ,,
Edinburgh in the 19th Century (*Shepherd*)	R. C. EDWARDS.
Gothic Architecture (*Whittington & Milne*)	,, ,,
Ecclesiastical Art in Germany (*Lübke*)	,, ,,
Art of Building (*Dobson*)	,, ,,
Erection of Dwelling Houses (*Brooks*)	,, ,,
Acoustics (*Smith*)	,, ,,
Modern Cottages and Villas (*Philpott*)	H. P. PHILPOTT.
Theory and Practice of Perspective Drawing (*Polak*) ..	A. POLAK.

LANTERN SLIDES:—
D. E. A. Horne (Member).

BOOKS PURCHASED:—
Inorganic Chemistry (*Thorpe*).
The Modern Plumber and Sanitary Engineer (*Sutcliffe*).
Public Libraries (*Champneys*).

Matters held over.

Owing to pressure on our space, we are obliged to hold over the worked examination answers in Section III. Subject c., Practice, and several other matters.

The Society of Architects Lodge, No. 3244.

The Lodge will meet at the Liverpool Street Hotel, E.C., on Wednesday, January 8th, 1908. Members of the craft who desire to attend as visitors should communicate with the Lodge Secretary, Mr. E. J. Partridge, Bank Buildings, Richmond, Surrey.

The W.M., Mr. Albert E. Pridmore, at the request of Mr. M. McLeod, the Secretary of the Masonic Institution for Boys, has consented to represent the Lodge at the forthcoming Festival, and hopes that all members of the Society, particularly those who are Masons, will assist in making the Lodge subscription list a record one.

Reviews.

The Theory and Practice of Perspective Drawing. A complete course of instruction to meet the requirements of the syllabus of the Board of Education and of similar examinations, by S. Polak, Art Master, Lecturer in Art under the London County Council, etc. University Tutorial Press, Ltd., H. B. Clive, 157, Drury Lane, London, W.C. 1907.

There are several ways of teaching perspective. It is an easy subject and in reality an interesting one, particularly when approached from the architect's standpoint; but it can be made exceedingly uninteresting if only pains be taken to that end. Thus while practically correct, nothing could be more befogging or more entirely dry than the treatise now before us, in which the results are reached by the most roundabout routes instead of simple direct projection. It would also have been advantageous if the author, who it appears is a lecturer in Art, had possessed some small knowledge of architecture, and had been able to produce artistic results. Anything more utterly inartistic or atrociously incorrect from an architectural point of view than the frontispiece, could not possibly be imagined. It is this sort of thing which brings the title of "Art Master" into disrepute.

English Shop Fronts, Old and New. A series of examples by leading architects. Selected and specially photographed, together with descriptive matter and illustrations, by Horace Dan, M.S.A., and E. C. Morgan Willmott, A.R.I.B.A., London. B. T. Batsford, 94, High Holborn. Price 15*s.* nett.

A book that is much needed, and one which will be specially useful to architects who wish to keep abreast of the times. The task of designing shop fronts comes properly within the province of the architect, but in some cases the matter is left in the hands of the shopfitter, because the tradesman is afraid that the architect will not give him that uninterrupted glass area which he considers necessary for the proper display of his goods. For this reason one is glad to note that the authors do not unduly insist upon manifesting the means of supporting the superstructure, but for the same reason one disagrees with their plea for the sub-division of the shop window in some cases into small panes. The book is beautifully illustrated by reproductions of photographs of old and modern shop fronts, taken by Mr. Dan, who has exercised a very wise discretion in the selections of his subjects. The letterpress and working drawings are by Mr. Willmott, and the result of the collaboration is a work which is at once artistic and practical. The book contains much valuable information and may be consulted with advantage, not only by architects, but by property owners and the public generally.

The Architects' Technical Bureau.

It is proposed to establish early in the new year a Technical Bureau, where architects can obtain direct and reliable information on building materials and appliances, new goods and methods of construction, etc. The arrangements are in the hands of a committee of architects, and the work of this Bureau will be classified under various departments covering the testing of materials, advice on technical and constructional matters, the issue of a tabulated catalogue guide, and a records department for details of value, including legal decisions. A further feature will be the inspection of sites for competition work with a view to supplying further details than are usually obtainable, and the Committee have in view the establishment of a "Museum" of materials. The Committee make the bold announcement that there will be no information which cannot be supplied through the post, and they undertake for a small annual fee to enable the architect to keep in touch with the latest developments in the various departments of his practice. Full particulars of the scheme may be obtained from the Secretary, at 11, Hart Street, Bloomsbury, W.C. The Bureau has already over five hundred subscribers.

The Standing Committees, 1907-8.

The following Standing Committees have been appointed by the Council for the Session, 1907-8. The President and Vice-Presidents being *ex-officio* members of all Committees.

Literature.—*Chairman,* Col. F. S. Leslie, R.E.; Henry Adams, M.INST.C.E.; R. G. Bare; T. W. Cotman; H. E. Hawker, F.S.I.; Ellis Marsland; C. H. Mead; P. B. Tubbs, F.R.I.B.A.; R. Walker, J.P., A.M.INST.C.E.

Examination.—*Chairman,* Henry Adams, M.INST.C.E.; James Bartlett; T. W. Cotman; H. V. Milnes Emerson; Col. F. S. Leslie, R.E.; W. R. Mallett, F.S.I.; Ellis Marsland; C. H. Mead; W. A. Scott, A.R.I.B.A.; W. Scott-Deakin, F.R.I.B.A.; T. F. Tickner, F.R.I.B.A.; J. Fletcher Trew.

Finance.—*Chairman,* E. J. Sadgrove, F.R.I.B.A.; R. G. Bare; James Bartlett; F. W. Chancellor, F.R.I.B.A.; Cholton James, F.R.I.B.A.; W. J. Jennings, J.P., F.S.I.; Walter W. Thomas, J.P.; P. B. Tubbs, F.R.I.B.A.; B. R. Tucker.

Practice.—*Chairman,* P. B. Tubbs, F.R.I.B.A.; R. G. Bare; J. Bartlett; F. W. Chancellor, F.R.I.B.A.; J. B. Corby, F.S.I.; H. V. Milnes Emerson; Cholton James, F.R.I.B.A.; W. J. Jennings, J.P., F.S.I.; Col. F. S. Leslie, R.E.; H. W. Matthews; E. J. Sadgrove, F.R.I.B.A.; Anthony Scott; W. Scott-Deakin, F.R.I.B.A.; T. F. Tickner, F.R.I.B.A.; Walter W. Thomas, J.P.; J. Fletcher Trew.

Registration.—*Chairman* (*ex-officio*), R. Frank Vallance, F.R.I.B.A. (*President*); every Member of the Council, for the time being, and the following (Members of the original Architects' Registration Bill Committee):—His Honour Judge Emden; J. F. McMullen (*Member*); W. Gilbee-Scott, F.R.I.B.A.; G. A. T. Middleton, A.R.I.B.A. *Vice-President*); Robert Walker, J.P., A.M.INST.C.E. (*Past President*).

Mainly about Members.

The foundation stone of a new building to become the Headquarters of the Male and Female Pottery Workers' Society was recently laid in Old Hall Street, Hanley. The architect is MR. W. CAMPBELL.

A south aisle and vestry has been erected, and other alterations and additions made, at Boulton Church. The plans were prepared by MR. J. NUTTALL, architect, and the estimated cost of the work is £1,200.

St. Joseph's College, Dumfries, shortly to be erected for the Marist Brothers, is estimated to cost about £11,500. The outer walls are of Locharbriggs red free-stones, the floors are fireclay tubes and concrete. MR. CHARLES HAY, of Dumfries, is the architect.

Mr. Balfour recently visited Aston to open the new Unionist Labour Club premises which have been built there. The building occupies the rounded corner at the junction of Park Lane and Park Road, Aston Cross, and is carried out in " Fordstone ', and thin red bricks, with a preponderance of stonework. The architect was MR. A. GILBEY LATHAM.

The lodge erected in Donegall Pass in connexion with the local branch of the Girls' Friendly Society was opened recently. The building was designed by MR. W. J. W. ROOME, architect. It is four stories high, with a red-brick facing to the main front, and the other walls finished with rough-cast. The constructional part of the building is carried out on the Hennebique patent ferro-concrete system, with piers for supports and solid fireproof floors.

The work in connection with the new rectory at Byton is now completed. It is built close to the church on a one-acre site, and the scheme has been approved by the Lord Bishop of Hereford, the Ecclesiastical Commissioners, and other authorities, and it has been erected by subscriptions. The building has been carried out from the designs, plans, and under the superintendence of MR. ERNEST G. DAVIES, architect, Hereford and Monmouth, the builder being Mr. J. H. Davis, of Leominster.

The erection of a new Sacristy has recently been completed at Belmont Cathedral, to the memory of the late Right Rev. Paul Wilfred Raynal, D.D., for twenty-eight years Prior of this Cathedral. It is built of native stone, and is lighted by four Gothic windows, tracery, and timber-panelled and moulded ceilings, supported on stone corbels and curved ribs, whilst the flooring is wood block. It has recently been consecrated by the Right Rev. Bishop Hedley, of Newport, and has been erected by the present Prior, the Right Rev. John C. Fowler, D.D., from the designs, plans, and under the direction of MR. ERNEST G. DAVIES, architect, of Hereford and Monmouth, the builders being Messrs. Bowers & Co.

Ordinary Meeting.

Alteration of Date.

The Third Ordinary Meeting of The Society of Architects, for the Session, 1907-8, will be held at Staple Inn Buildings (South), Holborn, W.C., on **Thursday, January 16th,** 1908, at 8 p.m. (not January 9th as originally fixed).

Agenda :—

1. The President to take the chair.
2. Minutes of the last Ordinary Meeting.
3. Nominations for Membership.
4. Ballot for the following Candidates.

For Membership :—

Anthony. Albert Evershed, a.m.inst.c.e.,	162, North Street, Brighton.
Cox. Arthur Lincoln,	5, The Avenue, Minehead, Somerset.
Lewin. George Henry,	County Education Offices, Northampton.
Peach. Robert Edmund,	37, Belvoir Street, Leicester.
Rutter. Charles Daniel,	Parr's Bank Chambers, Wrexham.
Sudbury. Harry Tatham,	Estate Offices, Ilkeston.
Triggs. Bernard George,	King's Buildings, Bombay.

For Studentship :—

Carter. Charles Shirley,	7, Princes Street, Cowley Road, Oxford.
Coombs. Donald Way,	25, Portman Road, Boscombe, Bournemouth.
Halliday. Ernest James,	Knowsley Park, Prescot, Lancashire.
Holden. Willie,	8, Reevy Road, Wibsey, Bradford.
Ingleton. Delamark Frank,	41, Machen Place, Cardiff.
Jenkins. Albert Henry,	Blackmill, near Bridgend.
Paurucker. Frank Lawrence,	Highland Villa, Cole Hill, Worcester.
Shelbourn. Edward Piccaver,	16, Park Road, Melton Mowbray.
Stewart. Harold Frederick,	Jesmond, Green Lane, Wavertree, Liverpool.
Stoner. Arthur Phillip,	Arrochar, Dyke Road, Preston, Brighton.

5. Presentation of Gold Medal to Mr. Albert E. Pridmore, Past President.
6. Paper on "The Planning of Electric Generating Stations."
   By Mr. Horace Boot.

Land Surveyorships in Canada.

Apropos of a letter in our last issue from a member in Canada, it appears that there is as little scope for surveyors as for architects in the Dominion. Lord Strathcona, High Commissioner for Canada, states that he is informed by the Minister of the Interior at Ottawa that there will be no work in Canada for surveyors or engineers before next spring, by which time it is expected that the demand will be fully met by those on the spot, and that such persons seeking employment should be dissuaded from proceeding to the Dominion at the present time.

THE
Journal
OF
The Society of Architects
FOUNDED 1884. INCORPORATED 1893.
Including Transactions and Architectural Notes.

No. 4. Vol. I.] FEBRUARY, 1908. [New Series.

The Society is not, as a body, responsible for the opinions expressed by individual authors and speakers.

Registration of Architects.

At the Forty-first Annual Convention of the American Institute of Architects held at Chicago in November last, the Chairman of the Registration Committee, Mr. W. B. Ittner reported that " the examination and registration of architects in this country, or as it is sometimes called the licensing of architects, is already an accepted fact in three states. In one of them, Illinois, the license law has been in force more than ten years, and in New Jersey and California a shorter period. The laws are also being enforced in these states. In Illinois where there are 700 licensed architects only one person is known to be openly violating the law, and that person has been convicted on three prosecutions.

" In California the whole question of the constitutionality of such a law has within the present year been revised by its Supreme Court, and the decision which has recently been published shows that the law is sustained on constitutional grounds on all points in dispute.

" It is only necessary here to quote from this lengthy and exhaustive decision a paragraph in two lines which ought to put at rest all vague opinions of laymen, that such laws are necessarily unconstitutional. It is as follows :—

" ' In our opinion the act in question is not open to the claims of petitioner against its unconstitutionality.' Several cases have been tried in New Jersey under the provisions of the existing registration law and decisions rendered, but in no case has the constitutionality of the law been questioned."

" Your Committee therefore offers the following resolutions :—

" Resolved, that the question of the advisability of the examination and registration of architects be left to the Chapters of the Institute and those persons

outside of their number who would be most interested in the safe construction of buildings, and that said Chapters furnish such assistance as may be necessary in formulating license laws which will result in regulating the practice of architecture as a profession.

"We further recommend, inasmuch as legislation of this character is being considered in various states, that a standing committee on state registration of architects be appointed whose duty it shall be to keep informed on all such laws or proposed legislation, to give advice to Chapters so requesting and to report from time to time to the Institute."

Review.

The Quantity Students' Assistant. A handbook of practical notes and memoranda, by George Stephenson (B. T. Batsford, 94, High Holborn, W.C.)

This little work is intended by the author to assist the student in his devious task of acquiring the requisite knowledge and skill to take off quantities. It aims at giving an exhaustive series of practical notes on many small but important matters which, it says, are frequently ignored, or slurred over by text books. We cannot say that this is carried out in the book now before us as one would be led to suppose. A chapter is devoted to each trade, and is written in a somewhat discursive vein, the author, apparently, having jotted down a series of items as they occurred to him without any particular order or system. We should have preferred to see a student led from point to point in a systematic way, so that there would be less risk in his omitting to take anything which should be taken. This is, however, at the outset, the great difficulty that an author on Quantities has to contend with. The work of a Quantity Surveyor is so diversified that few text books can really educate, they can but touch on the fringe of the intricacies of detail to be met with in sub-dividing a building—as represented by drawings—in the separate branches of the building trade. In his instructions as to timesing dimensions, the author says he reads the following $2 \cdot 2/2/\underline{10' \cdot 0''}$ as making 60·0, whereas it is the fixed custom to read it as making $\underline{80 \cdot 0}$; there should be no doubt on this point. As regards labours on stonework there is no attempt at imparting information on this head. In large stone jobs the contractor prefers having the labours given him, for even if he does not price them he is able, at once, to see the relative proportions required of labour to bed and joint, plain and sunk work, and moulded work, together with all the other labours necessary to convert the amount of cube stone given to the required shapes, constituting the stone front, as shown on the drawings. We should like to have seen this fully gone into. Perhaps the author may see his way to doing this in a later edition. In the Plumber, the author says the turn up of lead under the slates or tiles should have a welted edge to keep the water out; surely this is obviated by dressing the lead over the eaves fillet. He also mentions that the end of lead roll next lead should be soldered; this would make very bad work, both ends of roll should be bossed and not soldered. However, these also are points which can be corrected hereafter. There are many useful hints which the student will find invaluable, and we commend the little work before us as a general book of reference for the student when in some doubt as to the procedure he should adopt.

Obituary.

We regret to announce the death of Mr. Frank Brewer, F.R.I.B.A., F.S.I., of Richmond, Surrey, who died on Christmas Day, after a brief illness, at the age of 57. Mr. Brewer was elected a member of the Society in 1887, and was an active supporter of its work. He served on the Council for some time.

The Society has also recently lost by death, one of its oldest Irish members, Mr. F. O'Connor, of Ennis, an original member, whose connection with the Society dated from its inception twenty-three years ago. Although taking little active part in the work of the Society, Mr. O'Connor was one of its most consistent supporters, and his loss is much regretted.

As we go to press we have received a notification of the death of Mr. John Colson, F.R.I.B.A., surveyor to the fabric of Winchester Cathedral. Although not himself a member of the Society, he will be remembered by many for his great kindness on the occasion of a visit to Winchester some time ago, when he personally took the greatest trouble to see that every facility was given for viewing the work of reparation at the Cathedral.

The Architectural Scholarship (1908).

Value £10 per annum, tenable for Three Years.

There will be a competitive examination in the form of an Essay on Architectural History, and a Freehand Drawing, held on *May 7th*, 1908, *entries for which must be made before May 1st*. No entrance fee is required. Maximum age limit 19.

Entry form and full particulars may be obtained of the Secretary.

The Travelling Studentship.

Value £25 and a Silver Medal.

Subject for the Design Competition, 1908.

A Public Library on the open access system, to be erected on a level corner site open on two sides. The estimate of cost is not to exceed £5,000.

Drawings must reach the Secretary not later than May 1st, 1908. Copies of the conditions, site plan and other details may be obtained on application to the Secretary.

Proceedings.

THE Third Ordinary Meeting of The Society of Architects for the Session 1907-8 was held at Staple Inn Buildings, Holborn, W.C., on Thursday, January 16th, 1908, at 8 p.m.

MR. R. FRANK VALLANCE, I.R.I.B.A. (President), having taken the chair, the minutes of the previous meeting were read, confirmed and signed.

The following nominations were then announced :—

For Membership :—

ARROWSMITH. RICHARD,	2, Sentinel Buildings, Hanley.
BRUNDELL. PHILIP NICHOLL,	1, Princes Street, Doncaster.
BURTON. AMOS,	Town Hall, Stoke-upon-Trent.
DAVIES. ALAN HIER,	Austin Friars Chambers, Newport, Mon.
DICK-PEDDIE. J. M.,	8, Albyn Place, Edinburgh.
DONELLY. JAMES LOUIS,	Dawson Chambers, Dublin.
EAGLESFIELD. CHARLES W.,	Gordon Street, Workington.
FISHER. FRANK JAMES,	14, Queen Street, Cheapside, E.C.
FORD. ANDREW,	7, Gildredge Road, Eastbourne.
FORSHAW. EDWARD,	9, Market Place, Burton-upon-Trent.
HALLEY. CHARLES JAMES,	Dumbritton House, Dumbarton, N.B.
JOHNSON. TOM,	27, Oldham Rd., Miles Platting, Manchester.
KINGHAM. JOHN ERNEST,	Bank House, Grosvenor Rd., Aldershot.
LONG. ALFRED,	21, New Street, West Bromwich.
MOSCROP-YOUNG. FREDERICK CHARLES,	12, Buckingham Street, Strand, W.C.
PEIRCE. PETER,	30, St. Petersgate, Stockport.
ROWLEY. JOSEPH WILLIAM,	92, Tooley Street, London Bridge, S.E.
SANDARS. INGALTON,	23, Portland Street, Southampton.
TROTMAN. GEORGE,	20, Kingscote Road, Bedford Park, W.
WILSON. JOHN ARCHIBALD,	92, Bath Street, Glasgow.
WINTER. FREDERICK JOSEPH,	37, High Street, Southend-on-Sea.
WINTERBURN. ARCHIBALD HERBERT,	High Street, West Drayton, W.

For Studentship :—

DENNISON. GEORGE PEDDER,	22, Perth Road, Finsbury Park, N.
EATWELL. FRANCIS E. W.,	69, Blenheim Crescent, W.
EVANS. HENRY LLEWELLYN,	18, Greenfield Place, Llandilo.
FLANIGAN. JOHN GERALD,	46, Great Victoria Street, Belfast.
HORROCKS. FRANK GRAYSON,	Victoria Hotel, Bury.
KAULA. WILLIAM,	29, Wetherby Mansions, Earls Court Sq., S,W.
OWENS. JOHN PRYCE,	Roslin, Windsor Road, Penarth.
PARKIN. JOSEPH HENRY,	The Lennies, Green Hill Lane, Alfreton.
PASCOE. HERBERT,	c/o Miss Hinkin, Thomas St., Thomaston, Llandilo.
SNOWDEN. GEOFFREY NORTHING,	P.O. Box, 110, Klerksdorp, South Africa.
THOMAS. DAN WYNNE,	149, Cowbridge Road, Cardiff.
THOMAS. JOHN RICHARD,	Brooklands, College Street, Ammanford.
THOMPSON. ROBERT,	42, Market Street, Stourbridge.
WALSH. ARTHUR THOMAS,	35, Oxford Road, Kilburn, N.
WATSON. THOMAS MILBURN,	3, Lonsdale Street, Carlisle.
WHITE. HERBERT JOHN,	17, Livingstone Road, Southampton.

The ballot was then taken and the following candidates were declared to be duly elected :—

As Members :—

ANTHONY. ALBERT EVERSHED, A.M.INST.C.E.,	162, North Street, Brighton.
COX. ARTHUR LINCOLN,	5, The Avenue, Minehead, Somerset.
LEWIN. GEORGE HENRY,	County Education Offices, Northampton.

Peach. Robert Edmund,	37, Belvoir Street, Leicester.
Rutter. Charles Daniel,	Parr's Bank Chambers, Wrexham.
Sudbury. Harry Tatham,	Estate Offices, Ilkeston.
Triggs. Bernard George,	King's Buildings, Bombay.

As Students :—

Carter. Charles Shirley,	7, Princes Street, Cowley Road, Oxford.
Coombs. Donald Way,	25, Portman Road, Boscombe, Bournemouth.
Halliday. Ernest James,	Knowsley Park, Prescot, Lancashire.
Holden. Willie,	8, Reevy Road, Wibsey, Bradford.
Ingleton. Delamark Frank,	41, Machen Place, Cardiff.
Jenkins. Albert Henry,	Blackmill, near Bridgend.
Paurucker. Frank Lawrence,	Highland Villa, Cole Hill, Worcester.
Shelbourn. Edward Piccaver,	16, Park Road, Melton Mowbray.
Stewart. Harold Frederick,	Jesmond, Green Lane, Wavertree, Liverpool.
Stoner. Arthur Phillip,	Arrochar, Dyke Road, Preston, Brighton.

The President (Mr. R. Frank Vallance, F.R.I.B.A.), then presented Mr. Albert E. Pridmore, the immediate Past President, with the Gold Medal of the Society unanimously conferred upon him by the Council, and referred to the very excellent services rendered to the Society by Mr. Pridmore during the two years he filled the Presidential chair. As it was only two months since the Past President's term of office had expired, when his services and work in the interests of the Society had been mentioned, he would not go over the same ground, but content himself with expressing the hope that the recipient would live long to continue his distinguished career.

Mr. Albert E. Pridmore, in returning thanks for the kind remarks of the President, said it came as a complete surprise to him, and it was a compliment which he would cherish as long as he lived. He would always take the greatest interest in the work of the Society, and the well-being of its members.

The President then announced the result of the Students' Design Competition for an Entrance Lodge to a Public Park, for Mr. Leest's prize. The Council had selected the design under motto "Tyke," the author of which was Mr. Chas. H. Hudson, of Islington, who was placed first out of ten competitors. Two others had received Honourable Mention, viz., Mr. W. H. Smith, of Oxford, and Mr. C. B. Willcocks, of Caversham.

Mr. Horace Boot then read a paper on "The Planning of Electric Generating Stations."

Mr. W. Scott-Deakin, F.R.I.B.A. (Shrewsbury), proposed a very hearty vote of thanks to the lecturer for his paper. It contained a great deal of useful and practical information which they as architects would find of the utmost use for reference. He had had the pleasure of working in conjunction with members of Mr. Boot's profession in connection with generating stations, and though architects generally seemed inclined to think that the engineering profession rather encroached upon

their province, he was glad to have the opportunity of saying that in his opinion architects were only too delighted to work with them hand in hand.

Mr. Herbert W. Matthews (Bath), in seconding the vote of thanks, said that the question of electric generation and the erection of power stations was one of absorbing interest to everybody connected with public life, and to Corporations who had electricity works under their charge. He had been a member of an electricity committee in the West of England who undertook to supply electricity to a large district, and who unfortunately had not the advantage of such a paper as Mr. Boot's. They had to acquire existing electrical works promoted and erected by a company, and the difficulties which they had to overcome in the way of capital expenditure in putting right the mistakes made in its initiation were almost insurmountable. From an architect's point of view they had much in common with the electrical engineer in the erection of these works, and he was very glad to hear Mr. Boot lay so much stress upon the necessity for architects and engineers to work together. It was a very great mistake on the part of some engineers in not calling in the advice of a competent architect in the construction of their works, as in cases where large sums of money were dealt with a considerable saving would have been effected had they done so. They had derived a great deal of information from the paper, and a closer study of it would, no doubt, reveal much more.

Mr. Ellis Marsland (Hon. Secretary) supported the vote of thanks to Mr. Boot, and thought it was not very often that the engineer required—or desired—that the architect should work for him ; he generally liked to do the whole thing himself. The result was such as they saw in the illustration given of the Neasden Power Station, and he had no hesitation in saying that no architect was employed in the design for that building. On the left-hand side of the photograph of the building appeared that which to some extent represented a tower, but on comparison with the plan below he found it was only a portion of the range of buildings containing the boilers, and had no meaning at all. Mr. Boot had dealt with the question of vibration, but had made no suggestion whereby this might be reduced. It would be interesting to know the custom of engineers in this matter, and the method they adopted in order to get over this difficulty. With regard to the cost of the buildings themselves, he thought it an extraordinary thing that the majority of these buildings in the various towns mentioned which cost most were the ones which also cost most per k.w. He saw that in one instance, the total cost was £18,000, and the cost per k.w. was £23, but that in the case of similar works at Tunbridge Wells the cost per k.w. was only £11. It appeared that the larger the building the greater the cost per k.w., and he thought it extraordinary that there should be such a divergence of cost in respect of these buildings, as they must be to a large extent more or less alike. Another point in Mr. Boot's paper which he would suggest as an omission was with

regard to water power. On the Continent there were a great many stations where the power was derived from some river or canal, and he thought they in England might utilise their water power to a much larger extent, instead of reverting to gas. Mr. Boot had fallen into an error in telling them that brick and steel were fire-proof materials, and he could assure him they were not. The suggestion that buildings of that kind must be fire-proof was one which could not be carried out. It had been long exploded that buildings of simply brick and iron were fire-proof; they might be built of fire-proof material, but they were not fire-proof. Mr. Boot also advised them to put fire apparatus inside, although buildings of this kind should contain no combustible material. It would have been interesting to architects in general if the relative sizes, height, etc., of the chimney shafts erected for the buildings referred to, in relation to the boilers or the flues employed, had been given; but taking the paper as a whole they were very much indebted to Mr. Boot.

Mr. G. A. T. Middleton, A.R.I.B.A. (Vice-President), said it had struck him as an exceedingly difficult paper for architects to criticise, or in any way to enter into a discussion upon, for it treated the subject almost entirely from an engineering point of view. The one paragraph which really affected them was that relating to the style, which should be as economical as possible. It was left to the architect to deal with the exceedingly difficult problem of making a satisfactory architectural building from something which was strictly economical and utilitarian, such as a power station must be. Hitherto, it had been usual to build in brick or stone, but it looked as though in the future, buildings of that class would almost always be constructed of reinforced concrete, and thus the architect's difficulties would be immensely increased. It was already a dfficult matter to produce a satisfactory architectural composition in brick and stone, and it would be much more so when they had an entirely new material to deal with. It was a matter which would tax their ingenuity for a long time to come, not only in regard to power stations. Successful buildings had been produced in concrete, although he did not think they could be found in England. The Great Central Railway Station at Antwerp, he was astonished to hear after he had spent some time in admiring it, was of concrete, which showed that a satisfactory architectural composition could be obtained with the new material. Turning from the architectural point of view, he thought the lecturer rather took for granted that all steam engines would be worked in the future as in the past, with coal fuel, whereas, he thought that oil fuel was gradually taking the place of coal, at any rate in places where it could be easily supplied. In some small works he believed the oil was first converted into gas, and gas engines run from oil gas which could be done economically and without the risk of asphyxiation of which something had been mentioned. With regard to the buildings themselves, the amount of lavatory accommodation was exceedingly important wherever a great many men were employed in dirty work. It was found very satisfactory in certain works to

provide the men with a spray bath such as were to be found in big public schools for the use of the boys after a game of football, and which were always appreciated and found exceedingly useful. Mr. Boot had towards the end of his paper mentioned that he would like to read another on the protection of buildings from lightning, but he was able to say that they were to have one on that subject shortly by Mr. Alfred Hands.

Mr. W. Scott-Deakin, f.r.i.b.a. (Shrewsbury), asked whether the cost of the buildings given in the schedule included the cost of the ground, and Mr. Boot replied that it did.

Mr. R. Frank Vallance, f.r.i.b.a. (President), in putting the vote of thanks to the meeting, said Mr. Boot had warned them against building so as to make a nuisance to adjoining owners, and he presumed he meant in cases where the power stations were combined with refuse destructors. He did not say whether in his experience a nuisance arose from a generating station alone, or even with a refuse destructor if properly managed and looked after. The main object of the electrical engineer was to produce his power at the least possible cost, and the refuse was often burnt for that purpose, and not always with the object of preventing nuisance and destroying filth. He had visited many power stations and some with the combined plant, and in the latter cases he found that the residue which came from the refuse destructors was not sufficiently burnt, and was not good hard clinker as it ought to be. Referring to the Alphons Custodis Chimney, he was able to bear out the statement of Mr. Boot, that very excellent chimney shafts had been put up by this Company. He had recently saved 50 per cent. on the amount of a contract by adopting that particular chimney, saving some £500 on the chimney stack. It had been erected for some years now, and no sign of crack was to be observed. Mr. Boot had laid stress upon the importance of keeping the cost of the buildings low, in order, he supposed, that the engineer might have more money to play with in providing his machinery ; but he thought it was of as much importance to see that some architectural composition was arrived at if the building was to be in or near a town, and that the engineer should assist in keeping down his costs in order to get a little more into the building. He quite agreed with Mr. Middleton in his remarks concerning proper lavatory accommodation for the men.

The vote of thanks was then carried unanimously.

Mr. Horace Boot, in reply, said the question of vibration was a most difficult one, and there were methods of dealing with it, especially in large works where they had reciprocating plant. He had usually found it advisable to have no connection between the foundations of the engines and the main walls of the building. In a recent legal case he had been called in to advise on the question of vibration, and had found that the foot of the main walls was

adjacent to the bed of the large engines, but they successfully got over the difficulty by cutting channels between them and filling in with some loose material such as sand. He had in many cases to do away entirely with the foundations on which the engines had been laid by the contractor, who would think nothing of bolting them to the walls. In the ordinary way, if the engine was placed on two inches of felt, and then timber between the felt and the concrete, he thought they would have little or no trouble with vibration. He thought Mr. Marsland did not quite appreciate the difficulties they as engineers had had to put up with, not particularly with regard to refuse destructors, which were always a nuisance, but with regard to power stations alone. Although the law gave them parliamentary powers, and the local authority approved the site, very shortly after they started work they began to be served with all sorts of injunctions and notices to abate the smoke or the vibration.

He had seen very serious difficulty with one corporation which had been troubled in that way. They had 2,000 horse-power engines running all night, and it was considered by everybody that the vibration complained of was caused by these, but on more careful investigation he discovered it was not due to the engines, but to the atmospheric exhaust. The action set up in the atmosphere was sufficient to shake all the windows, many of them nearly a thousand yards away. There was no question about the shaking, but having ascertained the cause, it was a simple matter to put in a condensing plant and do away with the exhaust in the atmosphere entirely. Another cause of vibration was building on a chalky soil, which was to be found in districts like Sutton and Croydon, and the only remedy in a case of that kind would be to cut away the chalk entirely and put in a temporary foundation, laying the concrete on that.

Mr. Marsland had mentioned the use of water power in the production of electricity, and especially in Italy and Switzerland, almost all the works were run by water power; but he did not think there was any possibility of utilising their water in England, as it was too small and unreliable. Some which only required the minimum amount of power might make use of rivers as had been done in Scotland. In Ireland, there were one or two water power schemes awaiting capital, and they would be only too pleased to put down plant. With reference to Mr. Marsland's remarks with regard to fire apparatus, he did not mean that they were to be used for the building itself, so much as for anything inside which might catch fire. At the Bristol Corporation Works, for instance, some time ago, the switchboard caught fire and burnt the roof out and damaged nearly a hundred thousand pounds worth of machinery; the roof was built of wood, factory fashion, everything else about the building was brick. He agreed with Mr. Marsland in that brick and stone would burn, but they wanted something to stop fire with, and if every precaution was taken there would be very little to burn.

Mr. Boot also remarked on the extreme difficulty of keeping water out of the flues. In building chimney shafts a builder usually specified the temperature which it would stand, and if anything went wrong would blame the engineer for working his plant to exceed the temperature stated. It was a most difficult matter owing to the expansion and contraction caused by the difference in temperature.

With regard to the use of oil fuel, one of its advantages was certainly that it was much easier to handle than coal, but its effect on the boiler and general plant was disastrous. With regard to the President's remarks as to nuisances, there were four distinct forms of nuisance, firstly, the nuisance of vibration, secondly, the noise, thirdly, the atmospheric vibration, and fourthly, the question of smoke; and then there was another which was not often met with, and that was the carriage of heavy material along certain roads causing extraordinary wear and tear.

As an engineer, he disliked the combination of a refuse destructor with a power station; but in the interests of the ratepayers if it could be done so as to reduce the cost of destroying refuse, then he thought they should be utilised. With regard to chimneys and their cost he had in one instance got in tenders for a chimney 9 ft. 6 ins. in diameter, 200 ft. high, including all foundations, and the lowest tender was for £4,520, while the Alphons Custodis Company's tender was £3,180. He thought it was for architects to recognise that—although it came from Germany—there was something in the Alphons Custodis chimney, and it should be welcomed for the purpose. In a commercial business such as the production of electrical energy it was not wise to spend too much on the building from an artistic point of view, and he would be very pleased if any architect could design a better building than the customary one at a lower cost.

Cottage Ranges.

We understand that the "Model Cottager" Range and Fire Boiler combination will for the future only be obtainable from Mr. Cornes, who by agreement has severed his connection with Ellkay and Cornes, to carry on business as Cornes and Haighton, at Norton House, Leek, and 244, High Holborn, W.C.

Counterfeiting Stone.

How this may successfully be done is explained by the "Coatostone" Decoration Co., of 77, Mortimer Street, W. The liquid may be used for exterior or interior work and is applied with ordinary paint brushes, on plaster, cement, wood, terra cotta, stucco, and other materials. When applied to stone work it saves cleaning and acts as a preservative. It is claimed to be simple and economical in application and lasting and artistic in effect.

The Students' Section.

Result of Entrance Lodge Design Competition.

Ten sets of drawings were received in competition for the prize offered by Mr. Edgar J. Leest, J.P., for a Design for an Entrance Lodge for a Public Park.

The designs were submitted under the following mottoes :—

Fleur de lis	Art	Coboea	Vesta	Doric
Tyke	Isis	Colne	Triomphe	Hector

The award of the Council is as follows :—

Placed First. "Tyke," MR. C. H. HUDSON, 12, Almeida Street, Islington.
Hon. Mention. "Isis," ,, H. W. SMITH, 12, Helen Rd., Botley Rd., Oxford.
,, ,, "Fleur de lis," ,, C. D. WILLCOCKS, Willstead, Matlock Road, Caversham.

The drawings are on view in the Society's reading room.

"TYKE." (*Placed First*).—The elevations are characteristic of the special purpose of this class of building. The plan is compact and the design would probably be carried out for the given sum. The draughtsmanship is excellent and the perspective sketch admirable. The public waiting room is properly placed on the side nearest the entrance to the park, the fire-places are in the middle of the building so as to admit of one chimney stack, which not only adds to the comfort of the building by warming it thoroughly from the flues, but also gives a minor central feature to the elevations which adds to its special characteristics. The larder and w.c. are properly placed on the North side of the building, but the provision of only one w.c. for both public and caretaker is insufficient. There should have been two or more ; one for the caretaker and one or more for the public. At the same time the skilful manner in which access to it from both parts of the building has been managed, is commended.

"ISIS." (*Hon. Mention*).—The Committee has selected the drawings submitted by "Isis" for Honourable Mention and placed next in order of merit to those of "Tyke." The draughtsmanship is excellent and masterly, the ornamental string course and swag in the half-inch drawing being put in with a firm bold touch. Generally the style is more suitable for purposes of illustration than for those of actual construction, which, though admissible in competition work should be guarded against in preparing contract drawings, and this student is recommended to bear this point in mind. It is doubtful whether the work could be carried out for the sum given by this competitor ; which in any case bears too large a proportion of excess to the fixed limit. The sectional elevation and plan suggest a very handsome room for the public waiting room, and provision of a separate w.c. and lavatory for it, is sound in principle.

"FLEUR DE LIS." (*Hon. Mention*).—The Committee has also selected the drawings by "Fleur de lis" for Honourable Mention and next in order of merit and consider the draughtsmanship particularly neat and workmanlike. The larders, lavatories, and w.c.'s are properly placed upon the North side of the building and the latter accessories on the ground floor are well cut off—hospital fashion—from the other apartments, but the upper floor w.c. is placed immediately over the larder which is a very undesirable position for it. Apparently the bath waste runs for a considerable distance under the roof over the waiting room wing with a right-angled turn in it, which might have been avoided by a different arrangement of the plan.

"ART."—The plan is straggling and generally careless. No entrance, windows, or fire-place are indicated for the public waiting room; the chimney breasts are improperly drawn and apparently the bath room contains a pedestal closet and a lavatory basin, the provision of the former in the bath room being an American method which is considered undesirable. The elevation is more characteristic of a suburban villa than of a public park lodge. The half-inch section and elevations are not clear as regards some of their details, and the firm line adopted by more expert architectural draughtsmen is recommended to this student. Although a considerable amount of time and work has been put into the perspective elevation, the result is not satisfactory and some of the rules of perspective drawing have not been adhered to. For future work by this student, a lighter hand with the colour-box is recommended.

"COBOEA."—The plan has moderately good points and the elevation is somewhat original. The draughtsmanship, however, is careless and coarse and the omission of a North point from the block plan prevents criticism of the relative positions of the apartments and accessories. The rooms generally seem insufficiently lighted, which is, however, a point which could have been determined at sight had the dimensions of the rooms been figured. The general omission of figuring throughout is evidence of haste and carelessness, which this student is recommended to correct in future.

"COLNE."—There are some good points in this plan. It has been well thought out, and is compact. Although this student has not been successful in this competition, it is hoped that he will attempt others, but he should remember that the adjudicators have not the time to apply dividers or scales to the plans and sections. In the future he should assist them by figuring dimensions wherever possible. The elevation is more appropriate for a villa residence than for a lodge for a public park. It would have been better not to have made the hall serve for the chief entrance to the park-keeper's quarters and the public waiting room. A North point should always be provided with a block plan.

"HECTOR."—The plan is compact and fairly carefully thought out. A separate w.c. and urinal accommodation for gentlemen and ladies is a provision which may sometimes be required. This design is intended to meet such a case, and the complete separation of one from the other on opposite sides of the building is well managed. It would have been preferable if the pantry had not been placed in juxtaposition to the w.c. and urinals. The elevations do not suggest a lodge to a public park.

"TRIOMPHE."—"Triomphe's" drawings display a certain amount of vigour. It, however, borders on the violent and the absence of a block plan does not admit of full consideration being given to it. His idea is original, and some praise is due to him. The public waiting room should have some w.c. accommodation, there being plenty of space for it. Sections and first-floor plan should have had figured dimensions; the heavy buttresses are not constructionally justified by the height of the building, nor required for æsthetic reasons.

"VESTA."—"Vesta's" plan has some good points; the kitchen and scullery being conveniently placed adjoining one another. The w.c. and larder are properly placed on the North side, and the plan is well arranged to admit of simple drainage. The waiting room would be indifferently lighted, and the elevations are more suitable to a villa residence than a lodge to a public park.

"DORIC."—The waiting room is properly placed in a prominent position as regards the entrance to the park lodge and the park itself. The sanitary accessories are well arranged for simple drainage, and the waiting room is very well lighted. The w.c. and urinal for gentlemen and ladies are properly separated. The draughtsmanship is weak, and there is an unnecessary waste of space in the roof. The elevations have no special characteristics, and the drawings would have been more complete had the dimensions of the rooms been fully figured on plans and sections. No fire-place is shown in the waiting room.

The Year Book, 1908.

A copy of the new Year Book has been posted to every member and student of the Society. It contains full information regarding the aims and objects of the Society, together with a list of members and students and other particulars.

It should be noted that one of the recently-elected members, Mr. Stephen Woodbridge, jun., of Brentford, is a Fellow of the Surveyors' Institution, which designation was accidentally omitted, and the name of S. P. Padgett should be added to the list of students.

The Editor will be glad if members and students will keep him informed of any change of address or other matter affecting the reference to them in this publication.

Notes on the Planning and Design of Buildings for Power Works for the Generation of Electricity.

By HORACE BOOT, M.Inst.E.E., A.M.I.Mech.E., Consulting Engineer.

IN dealing with matters in which considerable expenditure is incurred, I always recommend my clients to obtain the best possible advice, and I do not consider the Electrical Engineer is the right man to advise on building structures, but it is for him to go to an Architect, when it comes to the designing of buildings and offices, and supply him with the requirements of the engineering side of the scheme. The same may be said in regard to architects undertaking engineering work; it is for the architect and the engineer to work together.

The subject of this paper covers such a very wide field, and necessitates dealing with so many points in practice, that there will only be time to briefly mention them. In doing so, I may state that I have selected my data from Electricity Works and Power Stations situated in the United Kingdom, America, Germany, France, Switzerland, in fact most countries in Europe, where I have been.

In the early days, the design of Power Stations was very crude and little understood, as the engines, boilers and machinery in general were small—such considerations as vibration, noise, nuisance or stability scarcely required attention, and the buildings usually consisted of an ordinary shed or a warehouse with a span roof; often-times an old building such as a mill, brewery, etc., was made to serve the purpose. But these days have gone by, and the generation of electricity is now undertaken on a very large scale, involving the expenditure of considerable sums of money for the buildings alone.

Selection of Site.

In selecting a site, which is the first, and perhaps the most important point, it is necessary to consider local conditions, in which capital outlay plays an important part, but the main points to consider are :—

(1) The supply of fuel.
(2) The supply of water for condensing and boiler feed purposes.
(3) The facilities offered by railway, river or canal.
(4) The question of nuisance and annoyance to surrounding neighbours.
(5) Available space for extensions.
(6) Subsoil and depth, together with the expense that will be necessary to obtain good solid foundations.

Fuel Supply.—The site should be selected near a railway, where a siding can be constructed. The length of the siding should be sufficient to enable a number of coal trucks to remain standing, as by this means arrangements can often be

made to unload the coal straight into the hoppers or elevating gear, and in smaller Works in the position in front of the boilers where it is to be used, so that the coal is handled with a minimum amount of labour, thus reducing the cost.

Water Supply.—Water in Electricity Works is used for :—

"A." Boiler feed purposes, in which case it must be fairly pure, or otherwise treated.

"B." In large quantities ; water is used for condensing purposes, the quality of which is not so important, especially where marine surface condensers are used.

"C." Domestic supply.

Carriage of Material.—There is not only fuel to be considered, but the question of transporting very heavy and large parts of machinery, so that if they have to be brought by road, it should be a good one ; if by rail, it should be easy to unload them, and if by water, there should be sufficient wharfage for dealing with heavy goods.

Nuisance to Adjoining Owners.—This plays a very important part, as under the existing laws it is possible, although you may be working under Parliamentary powers, for adjacent owners to obtain an injunction and shut down the works : the alternative being that one may have to buy up property at greatly enhanced prices ; and it is surprising how, in these owners' opinions, trifles in the way of nuisance become mountains, therefore this point must receive careful consideration.

Extensions.

In selecting a site for the works, provision must always be made for extensions, in most cases to all the buildings, including offices.

Electricity supply for all purposes is so rapidly developing that it is difficult to forecast what the future will be ; but one thing is certain, that whatever size one puts down the Works, it is only a short time before elaborate extensions are required, and, therefore, it would be fatal to the business to select a site where extensions, except at unreasonable expenditure, are impossible.

Subsoil and Foundations.—This matter is very often neglected. I have in my mind a very important Electricity Works, where sufficient precautions in this direction were not taken, with the result that it cost the Supply Authority considerably more than £100,000 to put this right ; whereas, if more attention had been given to this, probably a different site would have been selected and the money saved, which is now dead capital.

Buildings.

The requirements for the business, enumerated briefly, are as follows :—

(1) The main Engine Room, where the engines and generators are fixed.

(2) The Boiler House, where the boilers and automatic plant relating thereto are fixed.

(3) The Pump House and Auxiliary Plant, where feed pumps and small machinery in general is housed.

(4) Coal and Fuel Storage.

(5) Workshops for undertaking repairs.
(6) Stores and Storekeeper's Office.
(7) A Battery Room, if batteries are used.
(8) The Testing Room.
(9) Baths and Wash Houses for the Engineers' Department, General Offices, men in charge and engine drivers, also for the stokers and men whose calling makes them require separate lavatories.
(10) Chimney Shafts.
(11) Foundations for Engines, Boilers, Pumps, main flues and general work of a builder's character.

For the above, the details and space required, height, and depth of foundations, etc., should be given to the architect by the consulting engineer employed to carry out the work, and he should also inform the architect about how much the undertaking can afford to spend upon the buildings, as distinct from the other portions of the works.

It is, therefore, interesting at this stage to tabulate a few Power Stations, showing the cost of the buildings, as compared with the total capital outlay, from which it will be seen the cost of buildings varies considerably.

Name of Town.	Total Cost.	Cost of Land and Buildings.	Kilowatts Housed.	Cost of Buildings per Kilowatt.
Brighton	£ 717,738	£149,431	5,400	£27·78
Glasgow	£1,368,134	£211,172	10,993	£19·20
Bristol	£ 671,616	£ 53,550	9,050	£ 5·91
Newcastle	£1,192,442	£169,675	20,000	£ 8·48
Hackney	£ 280,982	£ 42,394	3,372	£12·57
Metropolitan	£1,802,383	£435,777	18,500	£23·55
Tonbridge	£ 22,420	£ 7,228	120	£60·23
Tunbridge Wells ..	£ 81,134	£ 13,207	1,170	£11·28

Whilst in no way sacrificing efficiency, the cost of the buildings should be kept low, because capital outlay plays a very important part in the cost of production of electricity, and very often in the case of small works in their early days, the capital outlay on buildings is likely to hinder the healthy and rapid development of the undertaking, owing to the necessity of charging a higher price per unit than would have been the case had the capital outlay been kept moderate, or rather in proportion to the business undertaken.

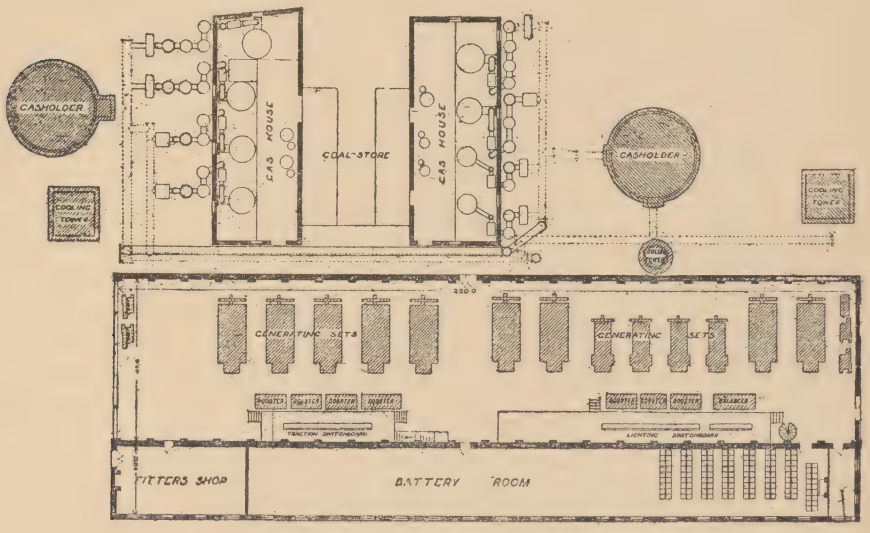
In many Power Stations it is usual to provide a house for the engineer-in-charge, and one for the works foreman, also arranging if possible, and space permits, to build workmen's cottages for the principal men employed.

Refuse Destructors.—It is the practice of several authorities, and I venture to think the practice will increase rather than diminish, to combine the destruction of refuse for the generation of steam, and where such is the case, the refuse destructor house should be so designed as to provide for an inclined roadway for the carts to deliver into the place from which the charging of the furnaces can be done direct.

The destructor building is better apart from the engine house, otherwise trouble will be experienced by hot bearings caused by the dust.

The Refuse House should be well ventilated, and arrangements made for disinfection and cleansing.

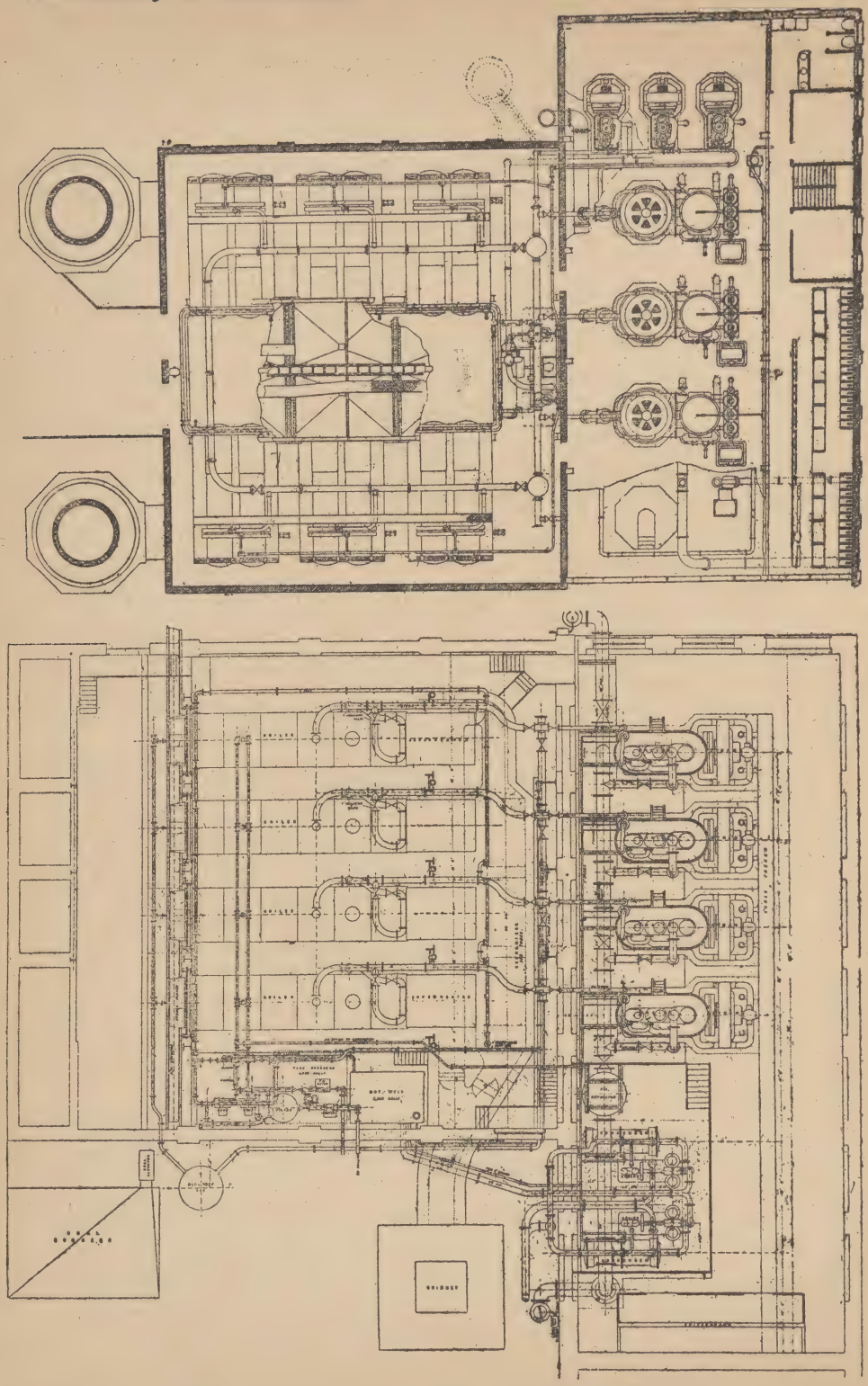
Hitherto, I have only dealt with class and type of buildings required for the generation of electricity by steam engines; but, should the prime mover be altered to, say gas engine plant (either of the suction, producer or power gas), then a boiler house is not required, but, in its place, it is usual to erect open outdoor buildings, so that noxious fumes given off by the gas making, cannot concentrate, but are at once carried away.



PRODUCER GAS ENGINE STATION.

With regard to the engine house, it is designed on much the same lines as that required for steam, with the exception that much more perfect ventilation must be provided for—either natural or forced.

In the case of oil engine plant, the buildings become much simpler, especially in the case of Works employing engines of the "Diesel" type for prime movers. Here, practically only an engine house and offices are required; the oil storage can be kept on the roof or somewhere adjacent outside the buildings.



PLANS OF POWER STATIONS OF THE YORKSHIRE POWER CO. (TOP) AND OF THE BOURNEMOUTH CORPORATION.

Shewing the arrangement necessitated by the type of engine used.

When dealing with steam as the prime mover, the space required may vary very much; for instance, in the early days it was customary to use slow speed rope-driven dynamos; these have been replaced with high speed engines taking up much less space, and again—certainly in big power stations—the steam turbine is rapidly taking the place of the reciprocating engine.

In the case of steam-driven sets, the boiler and engine houses are practically one building, as in the Bournemouth Corporation Electricity Works; but in the case of gas engines, the gas houses are separate from the main engine house, the gas holders are placed outside and all is arranged for thorough ventilation.

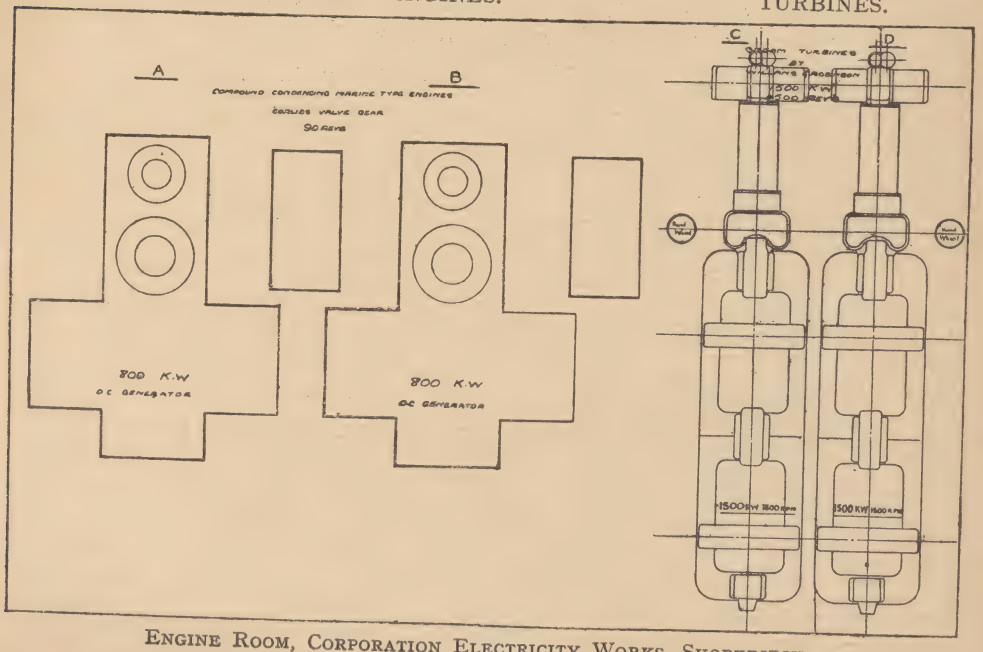
In the power station (the capacity of 8,450 K.W.) erected by the Yorkshire Power Company, steam turbines of the Curtis type have been selected for the generation of electrical energy, and the building has been erected on very simple lines in order to keep down the capital outlay per K.W. for buildings.

The space required by turbines is very much less than for reciprocating engines, although that is not altogether the reason why turbines have been adopted.

It has been found that for any sets of more than 1,000 K.W., a considerable gain in economy in steam consumption is secured.

The cost of buildings per K.W., vibration troubles, repairs, etc., are less, and on account of its cheapness in first cost, the steam turbine is destined to supplant the reciprocating engine.

RECIPROCATING ENGINES. TURBINES.



ENGINE ROOM, CORPORATION ELECTRICITY WORKS, SHOREDITCH.
(Illustrating the space required for the two types of engines.)

The engine house designed for the Borough of Shoreditch contains two 800 K.W. sets, and two 1,500 K.W. steam turbines side by side, and it will be seen that in a space of 28 ft. by 50 ft., 3,000 K.W. of steam turbine plant is installed; whereas the 1,600 K.W. of reciprocating engines occupy 48 ft. by 46 ft.

One of the latest London Power Stations is that at Neasden, which supplies the whole of the electricity for the Metropolitan Railway, and it will be seen that the total space taken is 324 ft. 7 in. by 102 ft. 6 in. for the engine room, with an addition of 114 ft. for the chimney and economisers.

The plan of the power station of the Great Northern and City Railway, where reciprocating engines are installed instead of turbines, is a striking example of how troublesome it is to get the boilers to take up the same space as the steam engines. Undoubtedly the most economical arrangement is for a line of boilers on one side of the wall and steam engines on the other; this necessitates the shortest length of piping, but owing to the space taken by boilers as compared with generating plant, it is found impossible, and many subterfuges have to be resorted to. Of course this is even more magnified with the steam turbine, which takes up less room still.

The power station belonging to the Toledo, Fremont and Norwalk Railway, for the supply of electricity to the railway, is constructed entirely of brick and steel, and is consequently fire-resisting throughout. The floors are constructed of brick arches, sprung between a structural steel frame-work. The walls are reinforced by pilasters which support the crane rails, and a Gustavino cemented tile roof surmounts the steel arched roof trusses. This is the American practice, and it differs in construction and lay-out, from the practice here.

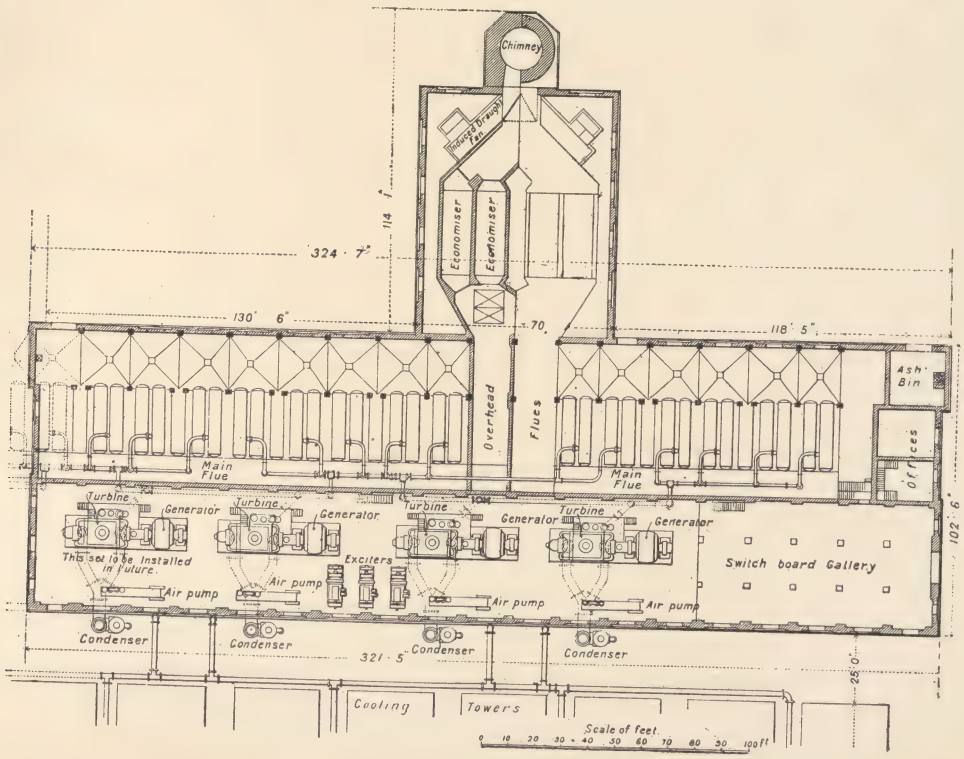
Style of Building.—The plans and views illustrated, show the style of buildings in every-day use, and it remains with you gentlemen to design a building which will have the advantages of the older ones, but which can be erected at a much less cost. The buildings must be fire-resisting, and the materials used are best left to local conditions, and whether the building is a brick or steel one depends upon the amount available for such building.

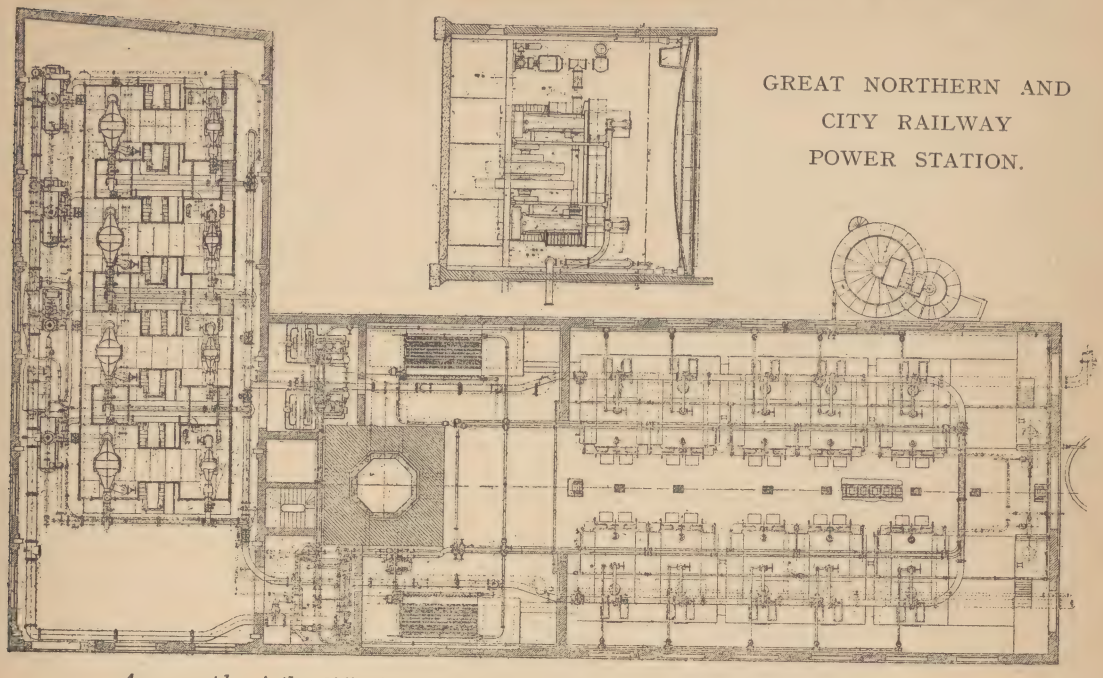
If the buildings are situated in a town, there should be plain ornamentations: if the walls are of brick, the use of white glazed bricks up to a height of 10 ft. finished off with chocolate glazed bricks with a cornice, forms a neat and ornamental finish inside.

The walls, or rather pilasters, must be of sufficient strength to carry rails on either side for the crane, which crane should be designed to lift not less than 10 tons, and in the case of big power stations, 20 tons.

The question of what forms the best flooring for an engine room has often been debated, and so far as appearance goes it is hard to beat tesselated paving; but in this case, it is necessary to section it up in squares, and I have found that if this

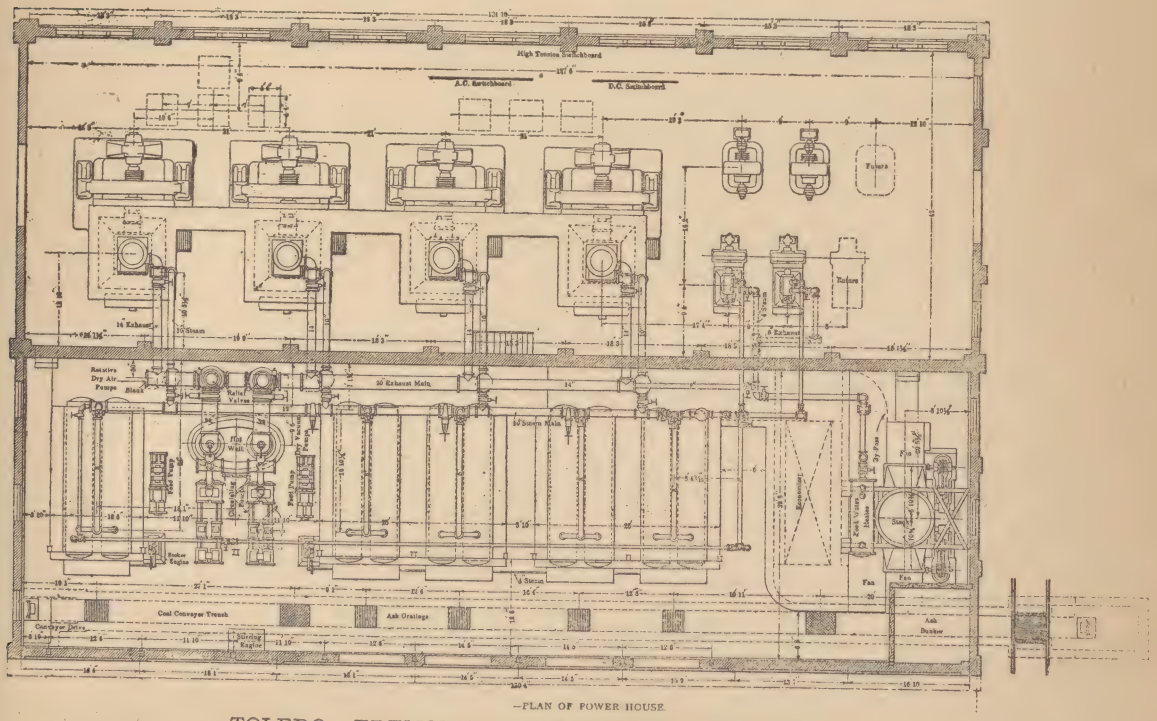
NEASDEN POWER STATION.





GREAT NORTHERN AND
CITY RAILWAY
POWER STATION.

An example of the difficulty of housing boilers to occupy the same space as engines.



—PLAN OF POWER HOUSE.

TOLEDO, FREMONT AND NORWALK RAILWAY.

(*An example of economical planning.*)

is done and a gap, of say ½ in. left, this space can be run in with a very hard setting compound, having sufficient give in it to prevent the pavement cracking.

Another form used is tiles; but the trouble is, that heavy tools are often dropped, and invariably a tile is broken.

Wood block flooring has been used, but with oil and grease about, it is very difficult and expensive to keep clean.

Where, however, appearance does not matter so much, I am in favour of using blue bricks placed sideways, which forms a most efficient flooring so far as wear goes, but it does not look so neat as a tesselated one.

I ought perhaps to mention that in America they often place the boilers one above the other on different floors; but this practice has not been copied over here, except in one case, and there are undoubtedly objections to it.

The height of roof varies according to the plant to be installed. Should it be decided to instal steam turbines, the height can be kept low; on the other hand, if reciprocating engines are installed, the height of the roof will be much more.

Anyhow, whatever plant is installed, a travelling crane is indispensable.

It is important in designing, to take special care with regard to the levels, as where heavy machinery has to be managed, the engine room floor should undoubtedly be all on one level.

Again, it is important where main flues have to be constructed and economisers installed, to see that they are not constructed below the ground water level, as experience has proved it to be very difficult to keep the water out of the flues, although many schemes have been employed.

With regard to the minor requirements, the usual office accommodation, such as :—general clerks' office, waiting room, chief engineer's office, superintendent's offices, lavatories, stores, workshops, etc., I cannot do better than leave it in your hands.

To go into these details would make this Paper longer than is my intention, so I have only briefly enumerated the requirements.

With regard to drains, I must sound a warning note, and that is, that workmen have a nasty habit of throwing anything down drains. It has been found that large quantities of dirty oil, waste and things of that nature find their way into the drains; so that special precautions should be taken and arrangements made for cleaning them out, for inspection and accessibility.

It is also important that the main blow down pipes from the boilers should not enter the drains, but should discharge into a large open sump and then overflow into the drains.

With regard to chimneys, numerous designs are in use, but one design which deserves special mention is that of "The Alphons Custodis Chimney Construction Co." It consists of hollow blocks, keyed with cement, and I have had the experience of constructing two of these chimneys with satisfactory results.

Cable Ways and Pipe Trenches.—The foundations required for engines, boilers, pumps, etc., are often elaborate so far as their requirements go, and it is usual to make these of concrete; the cable-ways, and pipe trenches required should all be carefully shown on the plan, and undertaken at the time of the general building.

Lighting.—The lighting of the building will, of course, be electricity, but it is advisable to have a second method, so that in the event of failure, the buildings are not left in darkness with valuable machinery running.

Heating.—Steam radiators can be used where boilers are installed.

Fire Apparatus.—Provision should be made for the usual fire apparatus, but, where possible, nothing of an inflammable nature should be used in the construction of the works.

Lightning Conductor.—The Chimney shafts and Buildings should be efficiently protected from lightning in the usual manner; but here I could easily read a paper on "What is an efficient manner of protecting a building from lightning," as with very few buildings it has been my lot to examine—although they have lightning conductors—can be considered in any way efficiently protected: in fact, I am sure that in many instances they would be safer without the lightning conductors.

At Tunbridge Wells and Maidstone, where I acted for the Corporation, the buildings are of a substantial nature, and answer all the requirements of an electricity works. During the time I have been advising Corporations, improvements have suggested themselves which I have mentioned in this paper.

In conclusion, I cannot do better than quote the remarks made by one of your members when reading a paper on "Sculpture in relation to Architecture," in which he states "sculptor and architect must not be rivals, but allies, firm-knit in loyal service to stern utility, whom they exist but to ennoble and adorn."

In our case, I maintain that engineers and architects should be in the same position.

NOTE.—The plans have been extracted from the *Electrical Review*, one of the leading scientific journals.

Examinations for Membership.

Date and Centres.

An Examination in the following subjects will be held by The Society of Architects, in **London,** and **Manchester,** on **April 14th, 15th, and 16th, 1908** and also in **Johannesburg** and other **South African Centres,** under the auspices of the South African Branch of the Society, on dates to be arranged. Application should in the latter case be made to the local Hon. Secretary, Mr. Edward H. Waugh, P.O. Box 1049, Johannesburg.

Section I.	ARCHITECTURE.	Planning, design, architectural history.
„ II.	BUILDING.	Construction and materials.
„ III.	PRACTICE.	Specifications, contracts, quantities.
„ IV.	SANITATION.	Ventilation, drainage, water supply, etc.

The latest date of entering for the Home examination is **March 31st, 1908.**

Age Limit, Qualification, and Fees.

Candidates for the examination must be 21 years of age or over, and have served at least three years pupilage to an architect, or the same term in a recognised school of Architecture. Examination papers will only be issued to candidates whose fees (£2 2*s.* 0*d.*) are paid in advance (see entry form).

N.B.—A candidate failing to qualify in any of the subjects may be admitted to a subsequent examination in such subjects on payment of a fee of £1 1*s.* 0*d.*

Successful candidates will be awarded a certificate qualifying them to make an application for membership in conformity with the regulations. Such applicants will be nominated for membership by the Council, but election to membership is by ballot of the members.

The following regulations apply only to Students of the Society.

Students of the Society may take the examination by sections at a fee of 15/-, for each section, or in the case of students who are 21 years of age or over, the whole examination at one sitting for a fee of one-guinea-and-a-half ; in each case under the above conditions as to procedure if relegated or successful.

Certificates of proficiency will be awarded in those sections in which a Student candidate qualifies, or a full certificate as the case may be, and if relegated such candidate may sit again at a subsequent examination on payment of the fee.

A holder of the four sectional certificates of proficiency issued by the Society, or their equivalent in certificates of exemption, who has attained the age of 21 years, may apply for the full certificate entitling the holder to make an application for membership.

The Society of Architects.

Examination, October, 1907.

Section III.—PRACTICE. Subject b.—CONTRACTS.

WORKED ANSWERS by F. W. MACEY, Examiner.

Question 1.—*J. Smith agrees, for £200, to do some alterations to Cedar Cottage, Purley, by the 22nd December, 1907, for A. Jones, under F. Robinson, an Architect. Construct, in a few lines, an agreement embodying these points, together with such other points as shall ensure the work being done well and quickly and without any disputes arising.*

Answer 1. To A. JONES, Esq.

I hereby agree for the sum of £200, to provide all labor and material of the best kind, and to make the alterations to Cedar Cottage, Purley, according to the specification and plans signed by me, and to complete the work by the 22nd December, 1907, time being of the essence of the contract, and to perform the work to the entire satisfaction of Mr. F. Robinson, the Architect, who shall be the sole judge of, and shall determine all matters arising out of or in any way connected with the contract, and who shall be at liberty to alter, add to, vary, or deduct from the work at his own valuation without vitiating or setting aside the contract.

Witness, J. SMITH,

S. BROWN, 11, Wortley Street, London. *2nd November,* 1907.

Question 2.—*A Builder did some painting work and sends in an account in one amount. The employer disputes the amount and asks an Architect to look into the matter. The work has been done in several rooms, varying in tints and number of coats of paint. How can the Architect check the account?*

Answer 2.—The Architect must first settle what number of coats have been put on in each room, the class of work done and the tints. He must then value each room separately and total up the combined amounts.

Question 3.—*Describe in a general way what work cannot be considered extra work on a contract, although it is distinctly additional work.*

Answer 3.—When work is done which is entirely foreign to the spirit of the contract, then such work is not extra work at all, but independent work.

Question 4.—*An Architect is negligent in his work and the client suffers. The Architect is consequently liable in damages to his employer. How long would the liability of the Architect last?*

Answer 4.—An Architect's liabilty for negligence terminates at the end of six years from the date of the negligence or from the date when it might have been discovered.

The Society of Architects.

Examination, October, 1907.

Section III.—PRACTICE. Subject c.—MEASUREMENTS AND VALUATION.

WORKED ANSWERS by W. R. MALLETT, F.S.I., Examiner.

Question 1.—*Square or cube the following dimensions, showing your working in detail :—*

4 / 3 / 2·11½ ; 7·0

10 / 4·6 ; 9·4

8 / 3 / 12·0 ; ·9 ; ·2¾

5·0
3·9
8·0

Dig and cart for inspection chamber.

48·0
9·4

1 B. in mortar.

Answer 1.

4 / 3 / 2·11½ ; 7·0 = 248·6

2·11½ × 12 = 4 × 3

35·6
7·0
248·6

10 / 4·6 ; 9·4 = 588·0

4·6 × 14 = 10 × 4

63·0
9·4
567·0
21·0
588·0

8 / 3 / 12·0 ; ·9 ; ·2¾ = 132·0

12·0
8/·9 = 6·0
72·0
8/·2¾ = 1·10
72·0
60·0
132·0

5·0
3·9
8·0
= 150·0

Dig and cart for inspection chamber

3·9
8·0
30·0
5·0
150·0

48·0
9·4
= 448·0

1 B; in mortar

48·0
9·4
432·0
16·0
448·0

Question 2.—*The following are items in an abstract : prepare same for " billing " :—*

Dig and cart.	*Blue Lias lime concrete in foundations.*	*1 B. Stock bk. wk. in mortar.*	*Rendering in Portland Cement.*
11490·0	5743·0	4260·0	2081·0
463·9	2650·0	627·4	
345·3	42·0	1491·8	

Fir framed in floors.	*Inch boarding to roofs.*	*Rolled steel joists, 7″ × 4″ × 18 lbs.*	*6 lb. milled lead on flats.*
478·0	1690·0	144·0	436·0
92·0	270·0	28·0	25·0
146·3	34·0	16·0	241·0

Answer 2.

Dig and cart

1149·0
463·9
345·3
9/12299·0
3/1366·5
456 yds. cube.

Blue Lias lime concrete in founds.

5743·0
2650·0
42·0
3/8435·0
9/2811·0
313 yds. cube.

1 B. Stock Bk. wk. in mortar.

4260·0
627·4
1491·8
⅓ = 6379·0
2126·4
272/4252·8(15 rods.
272
1532
1360
173 ft. red.

Rendering in Portland cement.

9/2081·0
231 yds sup.

6 lb. milled lead on flats.

436·0
25·0
241·0
702·0
6 lb.
112/4212(37 cwt.
336
852
784
28/ 68(2 qrs.
56
12 lb.

cwt.	qrs.	lbs.
37	2	12

Fir in floors

478·0
92·0
146·3
716·3

Inch boarding to roofs.

1690·0
270·0
34·0
19,94·0
19 sqrs. 94 ft.

Rolled steel joists. 7″ × 4″ × 18 lbs.

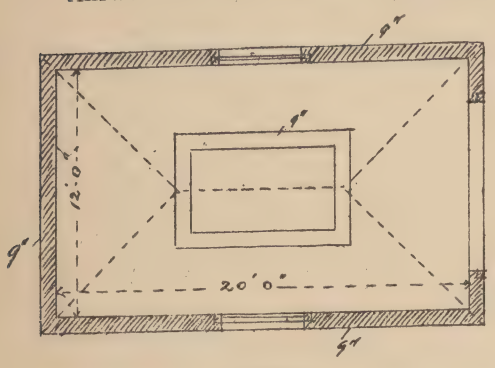
144·0
28·0
16·0
188·0
9 × 2 = 18
1692·0
2
112/3384·0(30 cwt.
3360
24 lbs.

cwt.	qrs.	lbs.
30	0	24

Question 3.—*A detached Motor-house, 20′ 0″ × 12′ 0″ in the clear and 10′ 0″ to plate level, above floor is to be erected. Draw a rough sketch, and take the dimensions of the following work :—Concrete foundations and paving. Brickwork to walls. Timber and plain tiling to roof. Providing what you consider necessary and suitable.*

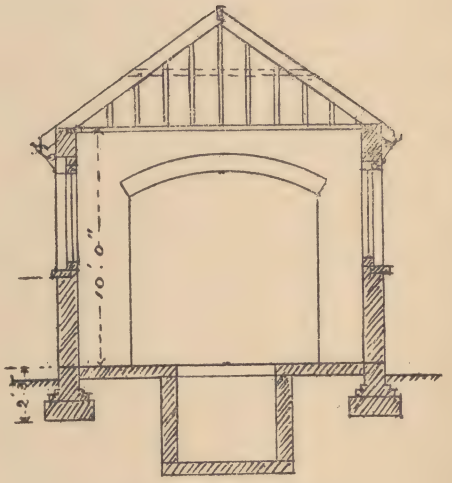
Answer 3.

Motor House.



PLAN.

		20·9	
		20·9	
		12·9	
		12·9	
67·0	P. Cement concrete		
2·0	founds. of walls	67·0	
·9			
		4·0	7·0
		·9	·9
8·6	Add	·9	·9
5·6			
·6	Under pit	5·6	8·6
20·0	Paving of cement concrete		
12·0	5″ thick floated in cement		
	1″ thick.		
7·0	Ddt want for pit.		
4·0			
7·0	Rendering in cement 1″		
4·0	thick floated for floor of		
	pit.		
		7·0	
		7·0	
		4·0	
22·0	Do. 6″ wide at edge	4·0	
	of paving round		
	pit	22·0	
22·0	Rounded edge to ditto.		
		20·9	
		20·9	
		12·9	
67·0	1¾ B. of Stock bk. wk.	12·9	
·6	in mortar Flemish		
	bond foots to walls	67·0	



TRANSVERSE SECTION.

		10·0
		1·0
67·0	1 B. add walls to top	
11·0	of plate	11·0
		8·0
		·4
8·4	1 B. ddt. doorway	8·4
8·0		
		4·0
		·4
2/4·4	1 B. ddt. wws.	4·4
4·9		
		7·9
		7·9
		4·9
		4·9
25·0	1 B. add walls round	
3·9	pit	25·0
		20·9
		20·9
		12·9
		12·9
67·0	Fir plate for roof	67·0
·4½		
·3		

9·0	Fir framed ridge.			20·0
·9				1·6
·2				1·6
4/12·0	Add hips.			23·0
·7			2/23·0	Cover roof with lath-
·2½			9·6	ing, yellow fir 9·0
2/8/9·6	Add rafters.			double laths se- 0·6
1/ ·4½				cured by cut nails,
·2				eaves and Burslem 9·6
4/2/6/4·6	Add do. on hips averaged.			tiles of approved
·4½			2/15·0	brown tint laid to
.2			·6	a 4″ guage, each
6/7·0	Add ties or collars.			tile to be secured
·4½			4/2/12·0	by two galvan- 12·0
·2			·3	ised W. I. nails. 1·6
		·4½		Add for dripping 1·6
		·4½	4/12·0	eaves at ends.
		·2		Add for cutting, to 15·0
		·2		hips.
6/7·0	Wrot face on fir collar	1·1	4	Form hips with proper fan-shaped tiles made to bond in and line with the plain tiles.
1·0				Provide and fix W. I. hip hooks, forged to detail and of about 6lb. weight each.
			7·0	Cover ridge with Messrs. — and Co.'s No. 5 plain saddleback red roll ridge tile, set in cement.
			·2	No. 12 hipped end ridge tiles, with cresting, set in cement.

Question 4.—*Take off the dimensions of the Plumber's Work for a bath, to be fitted in an existing room on the first floor of a country house, to which there is already a cold-water service to the cistern in roof immediately above the bath, and providing lead safe and all necessary pipes, fittings, etc., as you may consider suitable.*

Answer 4.

Bath.

1	Messrs. ——— and Co.'s No. 46 strong copper rolled edged Roman bath, 5′ 6″ long and parallel sides, on ornamental feet, dished bottom, porcelain enamelled and polished white inside and sea-green outside, with 1′ gunmetal extra strong hot and cold screw down supply valves, 2″ copper trapped quick waste with pull up and overflow, and large earthenware soap tray, the fittings to be nickel plated: fixing, etc., complete.			6·0
				·3
				·3
				6·6
		6·6		5-lb. milled lead and 3.0
		3·6		laying as safe ·3
				dressed over rolls ·3
				on floor and to
				skirtings, etc. 3·6
				6·0
				3·0
				9·0
		9·0		6·3
				Copper tacking to 3·3
				do floor.
		9·6		Add to skirting. 9·6

1	2½″ dia. brass grating and fixing to outlet.
1	Forming hole in lead for same and dressing lead to rebate for grating, etc.
1	1″ Dubois lead trap, with brass screw cap to cleansing eye
1	Dussing and soldering end of do. to lead safe.
2·0	1″ lead drawn pipe, 7 lbs. per yard overflow through wall.
1	Inch Solder joint
1	Copper flap to inch pipe and fixing, &c.
16·0	¾″ lead drawn pipe 10·0 9 lb. per yd., cold 4·0 water service cistern 2·0 to bath valve, fixing &c., complete 16·0
1	¾″ brass union and *drill cistern for same.*
1	¾″ solder jnt.
1	Connect ¾ pipe to bath valve with solder jnt., &c.
3·0	2″ lead drawn pipe, 14 lbs. per yard, waste from back to outside of wall, bent as required.
1	2″ solder joint.
1	Connect 2″ lead pipe to bath trap, with solder joint, etc.
1	2″ brass thimble with molten lead joint to iron waste pipe.
29·0	2½″ dia. C. I. gd. floor 15·0 socketted 1st ,, 10·0 pipe with roof 4·0 molten lead joints and 29·0 fixing with pipe, nails, etc. complete. External waste pipe and vent pipe.
1	Extra only to junction to do. for back waste, with 2″ inlet and socket.
1	7 lb. lead slate and apron, about 18″ × 12″, and fixing in slating where pipe passes through roof with joint to iron pipe, etc., care being taken to exclude wet, etc.

Question 5.

Write the following items in the form of a Bill of Quantities, giving full descriptions of Materials and Work, sufficient to settle the prices, and put the prices for same current in your district, which must be named :—

Portland cement concrete 6″ thick over surface. 4″ stoneware-pipe drains for rain water, including digging, etc. 6″ stoneware-pipe soil drains with 6″ bed of concrete brought up to half diameter of pipe, digging, etc. Brickwork of local stocks in mortar. Paving of 4″ × 4″ Burslem tiles on concrete. Staffordshire plain tiling to roofs. Countess slating to roofs. Metal lathing to ceilings. Render float and set to walls. Distempering to ditto in "Duresco." Fir framed in roofs. Inch boarding for lead. 7″ × 4″ steel joists. Milled lead on flats, etc. Plate glass to ordinary windows. Four coat paint work.

Answer 5.

THE PRICES APPLY TO THE SUBURBS OF LONDON.

						£	s.	d.
	ft.		run	4″ diameter glazed stoneware socketted pipe drain, laid to proper gradients and jointed in cement, as rain-water drains, and include for digging to an average depth of 2′ 6″, filling and ramming and wheeling and spreading surplus earth, etc.	1/-			
	—		,,	6″ do. do. drain as last, but for soil drains, with cement concrete bed and at sides 1′ 7″ wide and 9″ average depth, and include for digging to an average depth of 4′, filling, ramming,				
rods	ft.			wheeling, etc., complete, as above	2/3			
			supr.	*Reduced.* Brickwork of hard local stock bricks in mortar, built in Flemish bond: no four courses to exceed one inch more than the thickness of the bricks laid dry. Each course to be well bedded and flushed up in mortar. All headers to be whole bricks and the perpends to be				
yds.	ft.			kept true	£14			
			,,	Paving of 4″ × 4″ best Burslem red tiles, ½″ thick, from an approved manufacturer, bedded and jointed in Portland cement, on and including a bed of cement concrete 4″ thick, floated on top to receive the tiles, and allow for levelling				
sqrs.	ft.			the ground, etc...	12/-			
			,,	Lathing with yellow fir double laths secured by cut nails, and plain tiling to roofs, with Staffordshire nibbed tiles from the —— tileries, laid to a 4″ gauge, every fourth course to be secured by stout galvanized iron nails; the tiles to have a slight bed of mortar at the head, and include for "tile-and-a-half" bonders,				
sqrs.	ft.			whips, valleys, verges, etc., etc, complete ..	45/-			
			,,	Cover roofs with best Bangor Ladies slating, laid with a 2½″ lap and two stout copper nails				
yds.	ft.			to each slate, complete	37/6			
			,,	Lath on ceiling with Jhilmil metal lathing, secured by 2″ wrought clasp nails	1/3			
			,,	Render, float, and set to walls	1/3			
			,,	Twice distemper on walls in Duresco	6*d.*			
			cube	Fir framed-in roofs	2/9			
sqrs.								
			supr.	Inch yellow deal boarding for lead flat, and include for firring up to proper falls, etc.,				
cwt.	qrs.	lbs.		complete	24/-			
			wt.	Rolled mild steel joists 7′ × 4″, and include for hoisting and fixing complete	12/-			
			,,	Milled lead and laying on flats, etc.	30/-			
	ft.							
			supr.	British polished plate-glass under 8′ super in a				
yds.				square, and glazing with sprigs, etc., complete	1/9			
			,,	Painting four oils on woodwork, finished in ordinary tints	1/-			
					£			

Correspondence.

To the Editor of "The Journal."

Workmen's Compensation Act.

SIR,—I shall be greatly obliged if any member of our Society can inform me how far a Building Owner, and also how far an Architect, is liable for accidents to workmen, for accidents occurring on Works in progress where a Contractor has not insured his men, and happens to come to grief through a large accident upon the Works. I should also like to know if, in the opinion of your readers, it is advisable to insert an item in the quantities for the premium upon insurance of workmen?

Corn Exchange Buildings, Sheffield.
4th January, 1908.

Yours faithfully,
THOS. WINDER.

SIR,—In answer to the above I may point out that Section 4 of the Workmen's Compensation Act, 1907, deals with the question. Subsection 1 of this section says:—

> "Where any person (in this section referred to as the principal), in the course of or for the purposes of his trade and business, contracts with any other person (in this section referred to as the contractor) for the execution by or under the contractor of the whole or any part of any work undertaken by the principal, the principal shall be liable to pay to any workman employed in the execution of the work any compensation under this Act which he would have been liable to pay if that workman had been immediately employed by him," etc., etc.

Note the words "*for the execution . . . . . of the whole or any part of any work undertaken by the principal.*" Thus, if a private person enters into a contract with a contractor to build him a dwelling house, this would not usually be for the execution of the whole or any part of any work undertaken by such private person. But if a builder employs an engineering firm to put an iron roof on a structure which such builder is erecting, he would be liable: it would be for the execution of a part of the work undertaken by the builder. But Subsection 2 entitles such principal to be indemnified by the person who, independently of this section, would have been liable to pay compensation to the workman. Moreover, the workman is entitled, under Subsection 3, to sue the contractor instead of the principal. And further, the section does not apply to any accident which does not occur on, or in, or about premises, on which the principal has undertaken to execute the work, or which are under his control or management.

Clearly, then, this section would not affect the majority of Building Owners. Even where it did, there would be no actual necessity to insert an item in the quantities

for the premium upon insurance of workmen, for the Building Owner would in any case have his right and remedy over against the contractor, and could not be called upon to pay the contractor for relief from a liability which falls on the contractor himself. Whether as a matter of practice and convenience such an item should be included, is a question for the parties themselves. Ordinarily, of course, there is no liability on the Building Owner to compensate the contractor's workman.

A. M. B.

Donations and Gifts to the Library.

The Hon. Librarian acknowledges with many thanks the receipt of the following donations and gifts to the Library.

M. J. H. Somake (Member)	..	..	£1 0 0
H. T. Sudbury ,,	..	..	1 1 0

BOOKS PRESENTED:—

TITLE.	PRESENTED BY.
How to Estimate (*J. T. Rea*)	.. B. T. BATSFORD.
Town Planning	.. GARDEN CITY ASSOCIATION.
Encyclopedia of Architecture (*Gwilt*)	R. E. PEACH (Member).

BOOKS PURCHASED:—

Architecture of Greece and Rome (*Anderson*)
,, ,, the Renaissance in Italy (*Anderson*).
Building Construction, Vol. IV. (*Rivington*).
Early Renaissance Architecture (*Gotely*)
Gothic Architecture (*Bond*)
Heraldry as Art (*Eve*).
Land Surveying (*Baker & Dixon*).
Modern School Buildings (*Clay*).
Practical Plane and Solid Geometry (*Harrison*).
Public Baths and Washhouses (*Cross*)
Residential Flats (Perks).

Library Catalogue.

A new Catalogue has been compiled, and is now ready. Copies may be obtained of the Secretary. Price, sixpence each.

The Society of Architects Lodge, No. 3244.

The Lodge met at the Liverpool Street Hotel, E.C., on Wednesday, January 8th, 1908, when one candidate was initiated by the W.M., and other business transacted. Owing to illness, several officers were prevented from attending, their places, however, being ably filled at short notice by other brethren. The next Meeting is on March 11th.

Legal Decisions.

Ownership of Drawings and Documents.

Messrs. Paul Bausor & Sons, architects, of Cambridge, were sued by *Messrs. Bailey & Tebbutt* in the Cambridge County Court last November for the right to documents, plans and specifications, etc., in connection with certain building work, or £25 damages for conversion. The plaintiffs employed defendants as architects, and the work was carried out and the professional charges paid. The question of the right to plans and documents had been previously discussed between the parties but no specific arrangement had been come to, and the defendants had refused to deliver them, firstly on the course of dealing between the parties, and secondly on the custom of architects to retain the original plans and documents. His Honour, Judge Wheeler, found that the defendants failed on the first point, and that on the question of custom he held that the case of *Gibbon* v. *Pease*, following *Ebdy* v. *McGowan*, was fatal to the custom, wholly apart from the view of Lord Justice Cozens Hardy. The law did not recognise the custom claimed by the defendants, and it was clear that the ownership of plans or the property in them should be made a matter of express and special contract, and in this case he found there was neither one nor the other. He therefore gave judgment for the plaintiffs for five guineas, to be reduced to one shilling on the delivery of the whole of the documents in question, and with costs. Permission to appeal was granted with a stay of execution, the documents to be deposited in Court. His Honour hoped that his judgment would be contested, so that an attempt would be made to upset the Court of Appeal, of which he was only the mouthpiece.

Deposit of Elevations with Local Authorities.

In the King's Bench Division, before Mr. Justice Channell, Mr. Justice Bray, and Mr. Justice Sutton, sitting as a Divisional Court, the case of the *King* v. *the Holyhead Urban District Council* ex parte *Jones and others*, came on for argument on December 19th. A rule for a mandamus had been obtained on behalf of the Welsh Calvanistic Methodist community in Holyhead calling upon the council to show cause why they should not approve and signify their approval in writing certain plans for the erection of a chapel in the London Road. The urban district council had, in fact, approved the plans conditionally upon further explanatory plans or elevations being submitted to the council, they having been advised by their surveyor that the plans as submitted did not agree with the requirements of their by-laws, and were nsufficient to enable the surveyor to see whether the building to be erected would be in accordance with the by-laws, or to enable him to supervise the erection of the building and see that it was built in accordance with the by-laws. Mr. Hughes with

Mr. Eldon Banks, K.C., for appellant, said the sole matter in dispute was whether or not the local authority could, under the bylaws, demand the deposit of elevations. He submitted not, and that the local authority had no right to impose any such conditions. Mr. Glen read affidavits showing that the cost of tracings of the elevations would be only 10*s.* 6*d.* It was not true that the council demanded these elevations as a matter of right. Mr. Justice Channell said if it had been made out that the council wanted the elevations to see if they would approve the building, they might have been going out of their way, and a rule might have been granted against them to hear and determine the matter according to law. But they had given a perfectly reasonable and *bonâ fide* explanation of why they wanted the elevations, and the rule must, therefore, be discharged, with costs. The other judges concurred.

Prospects in Vancouver.

We have received a further communication from Vancouver, warning architects that there is very little doing there, and that it is undesirable to try that Province. With regard to surveying, the best positions are only open to men well up in spherical trigonometry and astronomical work, as all lines are laid out from the astronomical meridian.

Carpenters' Hall Lectures, 1908.

On the following Thursdays at 8 p.m.

	LECTURER.	SUBJECT.	CHAIRMAN.
FEB. 13th	PHILIP NORMAN, F.S.A.,	"Roman London,"	SIR HENRY MAXWELL-LYTE, K.C.B., F.S.A.
20th	Prof. W. H. WAGSTAFF, M.A.	"Optical Illusions,"	Alderman SIR G. FAUDEL-PHILLIPS, Bart., G.C.I.E.
27th	RICHARD KEARTON, F.Z.S.	"Wild Nature's Ways,"	The Hon. WALTER ROTHSCHILD, Ph.D., M.P.
MAR. 5th	BANISTER F. FLETHCER, F.R.I.B.A., F.S.I.	"Georgian Architecture."	The LORD BALCARRES, M.P., F.S.A.
12th	JAMES POWELL,	"The History of Painted Glass and its Process."	The Rt. Honble. The EARL of PLYMOUTH, C.B.
19th	Prof. W. SOMERVILLE, M.A., D.Sc.	"Trees—New and Old,"	The Rt. Honble. VISCOUNT MIDLETON.

The lectures will be illustrated by lantern photographs. Admission free by ticket, which may be obtained of the Society, or at Carpenters' Hall.

Mainly about Members.

The design submitted in competition by Mr. A. S. R. Ley for new schools proposed to be erected in London Road, Romford, has been accepted.

Mr. Charles Carter, architect, of Nottingham, has been awarded the first premium for the new municipal offices for the Corporation of Hereford, the cost of which is not to exceed £3,500. There were ninety-eight entries.

Under the direction of Mr. Ernest Collier, architect, Carmarthen, the "Boyle" Natural System of Ventilation, embracing the latest patent "Air-Pump" Ventilators, has been applied to the National School, Ferryside.

The opening has recently taken place of the new Mount Tabor United Methodist church in Scarthin, Matlock. The church has cost £2,000, and has been constructed from plans by Messrs. J. Wills, of Derby.

Premises standing at the junction of Friar Street and Eign Street, Hereford, have been converted into a men's club. The necessary alterations were carried out under the supervision of Messrs. Groom and Bettington, the architects.

New schools are about to be erected by the Sisters of Mercy in Crispin Street, E.C. The building will be of red brick faced with stone. It will consist of a basement which will be used as a covered playground, ground floor, and two stories. Accommodation will be afforded for 192 children, mixed and infants. The architect is Mr. W. P. Ryan.

The partnership hitherto subsisting between G. E. Garlick and C. Flint, architects, etc., Buxton, Derbyshire, under the style of Garlick and Flint, has been dissolved, as has also that between W. H. de la T. d'A. Findlay and A. W. Roques, architects, etc., Basinghall Street, E.C., and Edinburgh, and Burgess Hill, Sussex, under the style of Findlay and Roques.

The new St. Paul's Church at Penarth has just been opened. The building was originally a Wesleyan chapel, but was damaged by fire and afterwards sold, and has now been thoroughly renovated and converted into a church capable of seating 450 people, with school and club rooms to accommodate 500 children and adults. Mr. H. Snell was the architect.

A new infants' school has been opened at Bedlinog. The building is designed on the central hall principle, with three classrooms, a cloakroom, and a head teacher's room. The walls are of local stone with Ruabon and Forest of Dean stone dressings. The work was designed and carried out under the supervision of the County architect, Mr. D. Pugh Jones, Cardiff, at a cost of £2,886.

The executive of the Male and Female Pottery Workers' Society are building new premises in Old Hall Street, Hanley. The office suite comprises secretary's office, boardroom, entrance hall, with vestibule, and lavatory accommodation on

ground floor, and store-room on first floor. The remainder of the building comprises the secretary's residence. The architect is MR. WILLIAM CAMPBELL, Hanley.

The German Emperor made an inspection of the Cistercian remains during his recent stay at Beaulieu Abbey. By the thoughtfulness of Lord Montagu, plans of the abbey, with a general description and history, had been prepared for the use of the Emperor and his suite. MR. WILFRID T. WIRE, the architect, under whose supervision the work of restoring the arches of the chapter house is progressing, had the honour of explaining the details of the work.

At the Victoria Hall, Llandrindod Wells, a Local Government Board inquiry was recently conducted by Mr. M. K. North, M.INST.C.E., Local Government Board Inspector, into an application made by the Radnorshire County Council for sanction to borrow £8,600 for the erection of police station, lockup, magistrates' room, county offices, and buildings at Llandrindod Wells. MR. R. WELLINGS THOMAS, F.R.I.B.A., of Llandrindod Wells, the county surveyor, exhibited and explained the plans.

The memorial-stone of Trinity Presbyterian Church was recently laid by Sir Henry Robson. The church, which is designed in the Decorated style, is to be built with red Pennant stone and Bath stone dressings, will comprise nave, transepts, aisles, chancel, minister's and choir vestries; the lecture hall, church parlour, class-rooms, and caretaker's residence being already built. The heating arrangements will be by hot water low-pressure system, with pipes and radiators. The ventilation will be by Messrs. Boyle and Son's system. The church will be lighted with the electric light, and will be seated to accommodate 600 worshippers. The architects are Messrs. P. MUNRO and SON, St. Stephen's Chambers, Bristol.

A new building forming an extension to the women's hospital in Bridge Street, Derby, has lately been opened. The extension is of red Leicestershire bricks, faced with stone dressings. On the first floor is the large ward, ventilated by casements, which open by means of a special gearing, and attached to the apartment are bath-room, lavatory, etc. There is also a private ward. The ventilation here is a special kind arranged by Dr. Copestake. The inlets for fresh air are just above floor level, and the used-up air is extracted near the ceiling, the outlet being fitted with silk flaps to prevent down draught. On the second floor are five nurses' bedrooms, with bathrooms, etc. The ground floor includes a waiting-room, dispensary, consulting-room, examining-room, etc. The architects are MESSRS. HUNTER & WOODHOUSE, of Belper.

The author of the selected design for Dudley Public Library is MR. GEORGE H. WENYON, architect, of Tipton. The hall and borrowers' lobby are entered from St. James' Road, and from these the news and magazine rooms are reached, also the lending department, and stairway leading to the reference room. The librarian's room adjoins the hall. Accommodation is provided on the ground floor for 20,000

volumes. The counter is 40 ft. long, fitted with indicators. The staff is provided for in the south-west corner of the building, and has a separate entrance from the private road. The ladies have a room of their own; the walls of the public rooms devoted to the reference library are vaulted in plaster, and have oak panelling. A large store is in the basement. The walls are of brick, and the roofs are to be covered with green slates. The woodwork generally is of red deal.

A new church has just been completed adjoining the Convent of the Cross, Boscombe. It has been erected with Swanage stone walling, and Chilmark stone quoins, arches, mouldings, and tracery. The present accommodation is for about 260 in nave and gallery. The roofs are covered with Broseley tiles, to match the other buildings. The walls inside are finished with sand face-plastering, with stone dressings. The roof is finished with fibrous plaster, having heavy moulded ribs, and cross mouldings. The principals are supported by moulded pilasters with carved caps and trusses. The altar is of white Italian marble, the centre portion of which is supported on green columns and carved canopy. The windows are filled with stained glass. The whole of the work has been completed from the designs and under the superintendence of Mr. Henry A. Whitburn, of 22, Surrey Street, W.C., and Woking.

The new secondary school for boys and girls in Market Road, Canton, Cardiff, has recently been opened. The building will accommodate 600 scholars—300 girls on the ground floor and 300 boys on the first floor. There is a large central hall on each floor, together with cloak-rooms, teachers' rooms, and entrance corridors; also cookery and manual instruction rooms. It is intended to build the laboratory block, comprising physical and chemical laboratories, lecture-theatre, and art-room, at once. The floors of all classrooms and halls are laid with wood blocks on concrete, and the internal walls are lined to a height of 4 ft. with glazed brickwork. The elevations are carried out in red pressed brickwork with Bath stone dressings. The caretaker's house adjoins the school. The school is heated on the low-pressure system. The plans were prepared by Messrs. James & Morgan, ff.r.i.b.a., architects, who were placed first in a competition.

A large block of schools at Winns Avenue, Walthamstow, was recently opened. They consist of boys', girls', junior mixed, and infants' departments, housed in separate blocks, each accommodating 440 scholars, making a total accommodation of 1,760. Separate buildings for cookery and laundry (two-floor block) and manual centres are provided, also a caretaker's house. The buildings are faced with "Redbank" red pressed bricks, relieved by Portland stone dressings, and the roofs are slated with blue slates from the Oakeley Quarries. The schools are planned on the central-hall system, with classrooms grouped around them. The central halls are 55 ft. by 27 ft., and have clearstory windows. Teachers' rooms are provided (two to each

block), also commodious cloak-rooms, lavatories, stores, etc. The floors of class-rooms and central halls are of maple blocks, the galleries in classrooms are sloped instead of stepped, and all inner walls have a glazed brick dado 4 ft. high. Large separate play-grounds for each department, with play-sheds, are provided. The lighting throughout is by electricity, and the heating is on the low-pressure system. The play-grounds will eventually be tar-paved. The contract amounted to £24,301, and has been carried out from the designs of Mr. H. Prosser, architect to the Walthamstow Education Committee.

New schools have been erected on a site adjoining the old Hafod Tanglwys Lane and Rhymney Railway at Aberfan, Merthyr-Tydfil, and are arranged in two separate blocks facing a new road. The infants' school contains four classrooms, accommodating 50 children, each with wide marching corridor and cloakrooms and lavatories attached. In the basement is a good covered playground, with boiler house, coals and wood store. The girls' school is arranged on the central hall principle, with seven classrooms, accommodating 50 girls each, grouped around the hall, and with openings therefrom or from corridor leading off the hall. There are two entrances, with cloakroom and lavatory adjoining. At the north end is head mistress's room, with large book store attached. Special attention has been paid to lighting, ventilation, and heating. The buildings are designed in a simple treatment of rocked-faced local penant stone and red brick dressings, the roofs being slated. Advantage has been taken of the nature of the site to provide in the basement a large cookery room, covered playground, boiler house and coals and wood store. The whole of the works, which have cost about £7,500, have been carried out from the designs and under the supervision of the Education Authority's architect, J. Llewellin Smith, Merthyr-Tydfil and Aberdare, who is also the architect of the Georgetown new boys' school, at Merthyr-Tydfil; also designed on the central hall principle with seven classrooms, accommodating 50 boys each. These buildings have cost about £4,200.

The Registration Bill.

Mr. L. A. Atherley Jones, K.C., M.P., who has charge of the Bill, has undertaken to introduce it at an early date during the present Session of Parliament. Members should, therefore, be prepared to use their influence with the Members of Parliament for their respective divisions to secure their help in the ballot and in other ways, and, if called upon, co-operate actively with the Society in pressing forward the measure. Individual, as well as united effort is necessary.

Ordinary Meeting.

The Fourth Ordinary Meeting of The Society of Architects, for the Session, 1907-8, will be held at Staple Inn Buildings (South), Holborn, W.C., on Thursday, February 13th, 1908, at 8 p.m.

Agenda :—

1. The President to take the chair.
2. Minutes of the last Ordinary Meeting.
3. Nominations for Membership.
4. Ballot for the following Candidates.

For Membership :—

Arrowsmith. Richard,	2, Sentinel Buildings, Hanley.
Brundell. Philip Nicholl,	1, Princes Street, Doncaster.
Burton. Amos,	Town Hall, Stoke-upon-Trent.
Davies. Alan Hier,	Austin Friars Chambers, Newport, Mon.
Dick-Peddie. J. M.,	8, Albyn Place, Edinburgh.
Donelly. James Louis,	Dawson Chambers, Dublin.
Eaglesfield. Charles W.,	Gordon Street, Workington.
Fisher. Frank James,	14, Queen Street, Cheapside, E.C.
Ford. Andrew,	7, Gildredge Road, Eastbourne.
Forshaw. Edward,	9, Market Place, Burton-upon-Trent.
Halley. Charles James,	Dumbritton House, Dumbarton, N.B.
Johnson. Tom,	27, Oldham Rd., Miles Platting, Manchester.
Kingham. John Ernest,	Bank House, Grosvenor Road, Aldershot.
Long. Alfred,	21, New Street, West Bromwich.
Moscrop-Young. Frederick Charles,	12, Buckingham Street, Strand, W.C.
Peirce. Peter,	30, St. Petersgate, Stockport.
Rowley. Joseph William,	92, Tooley Street, London Bridge, S.E.
Sandars. Ingalton,	23, Portland Street, Southampton.
Trotman. George,	20, Kingscote Road, Bedford Park, W.
Wilson. John Archibald,	92, Bath Street, Glasgow.
Winter. Frederick Joseph,	37, High Street, Southend-on-Sea.
Winterburn. Archibald Herbert,	High Street, West Drayton, W.

For Studentship :—

Dennison. George Pedder,	22, Perth Road, Finsbury Park, N.
Eatwell. Francis E. W.,	69, Blenheim Crescent, W.
Evans. Henry Llewellyn,	18, Greenfield Place, Llandilo.
Flanigan. John Gerald,	46, Great Victoria Street, Belfast.
Horrocks. Frank Grayson,	Victoria Hotel, Bury.
Kaula. William,	29, Wetherby Mansions, Earls Court Sq., S.W.
Owens. John Pryce,	Roslin, Windsor Road, Penarth.
Parkin. Joseph Henry,	The Lennies, Green Hill Lane, Alfreton.
Pascoe. Herbert,	c/o Miss Hinkin, Thomas St., Thomaston, Llandilo.
Snowden. Geoffrey Northing,	P.O. Box 110, Klerksdorp, South Africa.
Thomas. Dan Wynne,	149, Cowbridge Road, Cardiff.
Thomas. John Richard,	Brooklands, College Street, Ammanford.
Thompson. Robert,	42, Market Street, Stourbridge.
Walsh. Arthur Thomas,	35, Oxford Road, Kilburn, N.
Watson. Thomas Milburn,	3, Lonsdale Street, Carlisle.
White. Herbert John,	17, Livingstone Road, Southampton.

5. Presentation of Students' Design Prize.
6. Paper on "County Council Schools, their General Arrangement and Method of Building." By Mr. G. Topham Forrest (Member).

THE
Journal
OF
The Society of Architects
FOUNDED 1884. INCORPORATED 1893.
Including Transactions and Architectural Notes.

No. 5. Vol. I.] MARCH, 1908. [New Series.

The Society is not, as a body, responsible for the opinions expressed by individual authors and speakers.

Architects and the Corrupt Practices Act.

Mr. J. Alfred Gotch, F.S.A., F.R.I.B.A., Kettering, has formulated the following questions on points affecting country architects in relation to the Corrupt Practices Act, 1906, which have been submitted by the Council of the R.I.B.A. for the opinion of Mr. W. O. Danckwerts, K.C.

Question 1.—*Does an architect by acting also as quantity surveyor, and being paid by the contractor as stated in the summary without having informed the building owner, render himself liable to prosecution under the Prevention of Corruption Act,* 1906*?*

Answer.—He does not. In order that an offence may be committed the thing must be done corruptly, and merely doing honestly what is indicated by the question is not corrupt.

Question 2.—*Does an architect, acting also as quantity surveyor, who puts into the bill of quantities without informing the building owner a sum of money to be paid to him by the contractor for printers' and lithographers' charges for printing the bill of quantities render himself liable to prosecution under the Act?*

Answer.—The same answer applies to this question as to Question 1.

Question 3.—*Does an architect, acting also as quantity surveyor, by charging remuneration for revising the bill of quantities where there is a variation in the works without informing the building owner render himself liable under the Act?*

Answer.—The same answer applies to this question as to Question 1.

Question 4.—*Does an architect who puts in the bill of quantities a sum of money to be paid to him by the contractor for copies of drawings other than the first set without informing the building owner render himself similarly liable?*

Answer.—The answer applies here also. But I should point out that under the forms herewith the cost of these should be borne by the builder.

In my opinion the system of charging the employer through the builder for bills of quantities is not a commendable one, because it is calculated to mislead the employer, if not to conceal the fact of payment from him. The better practice would be for the architect to get his pay direct from the employer.

Twenty-Fourth Annual Dinner.

The Annual Dinner of The Society of Architects will be held at the Trocadero Restaurant, Piccadilly Circus, W., on Friday, May 22nd, 1908. The chair will be occupied by the President (Mr. R. Frank Vallance, F.R.I.B.A.). Further particulars will be announced in due course.

Woman's Sphere in Architecture.

The first Australian Exhibition of Woman's Work held at Melbourne has impressed Mr. R. J. Haddon with the fact that architecture can hardly be expected to occupy at all a prominent place in an exhibition of woman's work, and this has proved the case in the present instance. In the specimens exhibited, some reasonably good planning is shown. His remarks in the *Journal of the Institute of Architects* of New South Wales show that in architectural drawing the women of New South Wales are well to the front, the drawing expression in some of the exhibits being remarkably good. That woman should study at least the domestic aspect of architecture seems only reasonable, and he has known more than one capable architectural assistant, both in England and Australia; and builders' technical assistants as well; and it is questionable whether it is necessary to go up a ladder to become an architect—a reasonably good one may perhaps be created upon the ground.

Amendment of the London Building Act. L. C. C. General Powers Bill Part IV. Building.

The above Bill contains in Part IV. several important amendments affecting the London Building Act, inasmuch as the County Council seek by this Bill to repeal Clauses 75, 76 and 77, of the London Building Act of 1894, and to replace them by other provisions: firstly, enabling the Council to allow horizontal partitions in buildings or warehouses of the manufacturing class; secondly, removing all restrictions on the Council's powers to allow increased cubical capacity for buildings of this class; and thirdly, giving the Council discretionary powers with regard to openings in party walls, the provision of fire-resisting doors constructed of materials other than iron, and the uniting of buildings.

Additional cubical extent may be necessary for certain trades, but such a matter should not be subject to the will of the London County Council and the discretion of its officials.

Apart from this, the method adopted of introducing these amendments into a General Powers Bill, thereby greatly lessening the chance of their being observed by those affected, is one greatly to be deprecated.

Reviews and Announcements.

Towers and Spires: their Design and Arrangement. By E. Tyrrell Green, M.A., Professor of Hebrew and Theology and Lecturer in Architecture, at St. David's College, Lampeter; with 129 Illustrations from pen and ink drawings by the author, and two maps. (London: Wells, Gardner, Darton & Co., Ltd., 3, Paternoster Buildings, E.C. Price 10/6.

In spite of the amateurish character of its illustrations, the book on *Towers and Spires* which Professor Green has recently published is one of considerable value, displaying a large amount of investigation which has extended over a considerable number of years. The way in which it has been put together is suggestive of Bond's *Gothic Architecture*, but unfortunately ome of the best points of that book have been overlooked. It would have been much better, for instance, to have classified the towers according to their own characteristics and not to have adhered to a division into styles which does not properly apply to them. A noticeable feature is the introduction of many continental examples, though the book is devoted to English work in the main, and the result is that considerable illumination is thrown upon doubtful points.

Portuguese Architecture. By W. Crum Watson.

During March, Messrs. Constable will publish a very important work, on the subject of "Portuguese Architecture," by Mr. W. Crum Watson. It will be the first English work devoted entirely to this subject, which is here dealt with in a comprehensive manner. Every building of note which is famous for its Architectural features, has been visited personally by the author. An introduction discusses the relation of Portuguese Architecture to the history of the country, and it is shown how closely it is possible to read a nation's progress in the structures raised by its people. Painting Church plate, and tile work are also dealt with, and several chapters are devoted to the influence of the Moors.

The Book contains about 100 illustrations from photographs, as well as two coloured illustrations of wall tiles, a map, and numerous plans.

London County Hall Competition.

The winner in the final stage is Mr. Ralph Knott, of 66, Oakley Street, Chelsea, S.W., whose design was chosen by the three assessors, their recommendation being adopted by the London County Council. Mr. Ralph Knott, who is twenty-nine years of age, was a pupil of Sir Aston Webb, R.A.

One hundred and fifty-two architects competed independently or in collaboration, in the preliminary competition, from among whom fifteen were selected for the final in addition to the eight selected by the London County Council.

The twenty-three competitors subsequently elected Sir Aston Webb, R.A., as the third assessor, to act in conjunction with Messrs. Norman Shaw and Riley.

The designs have been on view to the general public for a week and have also been published in the professional journals so that members will have had an opportunity of criticising them.

While it is a question whether the design will bear comparison with other large buildings of a similar kind, the plan is undoubtedly the best of those submitted, and Mr. Knott is to be congratulated on his success.

Proceedings.

THE Fourth Ordinary Meeting of The Society of Architects for the Session 1907-8 was held at Staple Inn Buildings, Holborn, W.C., on Thursday, February 13th, 1908, at 8 p.m.

MR. R. FRANK VALLANCE, F.R.I.B.A. (President), having taken the chair, the minutes of the previous meeting were read, confirmed and signed.

The following nominations were then announced :—

For Membership :—

BRADFORD. PERCY RICHARD,	Carlton Chambers, 12, Regent Street, W.
BUTTERS. B. HARLOW,	Albion Chambers, King Street, Nottingham.
FRY. PETER GEORGE,	Woodford, All Saints Rd., Weston-super-Mare.
HIDER. ERNEST JAMES WEDLOCK,	8, Cliffords Inn, E.C.
JANE. WILLIAM,	Lee Wood, Weston-super-Mare.
KINGWELL. ALBERT EDWARD,	103-4, Cheapside, E.C.
LAWSON. GEORGE JOSEPH,	Granville Chambers, Bournemouth.
OVERTON. WILLIAM HENRY,	22, Ship Street, Brighton.
RANSON. WALTER	West Street, Hazlemere, Surrey.
RINGS. FREDERICK,	21, Railway Approach, London Bridge, S.E.
TAYLOR. JOHN HENRY,	2, The Broadway, Finchley, N.
WEBB. WILLIAM ARTHUR, A.R.I.B.A.,	23, Powis Square, W.C.
WIBLIN. FREDERICK A.,	92, Old Town Street, Plymouth.
WILDE. SYDNEY JOHN,	Boulevarde Chambers, Weston-super-Mare.

For Studentship :—

ALLFREE. PERCY REGINALD HENRY,	61, Middleton Square, E.C.
BOAG. ROBERT STEVEN,	"Kebroyd," Lennoxvale, Belfast.
CATLING. FRANK RICHARD,	27, Loftus Road, Shepherds Bush, W.
DAKIN. ERNEST ALFRED,	32, Havelock Raod, Norwich.
DEAR. FRANK F.,	210, Lambeth Road, S.E.
ENGLISH. CHARLES ARTHUR,	Ash Lea House, South Hylton, Sunderland.
FORD. CHARLES,	Bishop Land, Emmer Green, Reading.
GARNHAM. ERNEST WALTER,	33, Bickerton Road, Highgate, N.
KNYVETT. JOHN SEYMOUR,	51, Hagley Road, Edgbaston.
MAPLE. CHARLES ALBERT VICTOR,	Gurney House, Stratford, E.
PHAYRE. HAROLD,	Priory Villa, Shrewsbury.
REES. ALFRED EDWARD,	159A, Bedford Hill, Balham, S.W.
SMITH. SIDNEY RICHARD,	145, High Street Streatham, S.W.
STAFFORD. JOHN EDWARD,	c/o Mrs. Hailes, Station Rd., Bill Quay-on-Tyne.
THORPE. ALEXANDER,	"Glenbrook," West Malvern.
TRUMPER. THOMAS VICTOR,	Ivy House, South Broom, Devizes.
WHELAN. JOSEPH,	11, Fairhill, Cork.
WHITE. FRANCIS HARTLEY,	1, Aston Street, Iffley Road, Oxford.

The ballot was then taken and the following candidates were declared to be duly elected :—

As Members :—

ARROWSMITH. RICHARD,	2, Sentinel Buildings, Hanley.
BRUNDELL. PHILIP NICHOLL,	1, Princes Street, Doncaster.
BURTON. AMOS,	Town Hall, Stoke-upon-Trent.
DAVIES. ALAN HIER,	Austin Friars Chambers, Newport, Mon.
DICK-PEDDIE. J. M.,	8, Albyn Place, Edinburgh.
DONELLY. JAMES LOUIS,	Dawson Chambers, Dublin.
EAGLESFIELD. CHARLES W.,	Gordon Street, Workington.
FISHER. FRANK JAMES,	14, Queen Street, Cheapside, E.C.
FORD. ANDREW,	7, Gildredge Road, Eastbourne.
FORSHAW. EDWARD,	9, Market Place, Burton-upon-Trent.
HALLEY. CHARLES JAMES,	Dumbritton House, Dumbarton, N.B.

Johnson. Tom,	27, Oldham Rd., Miles Platting, Manchester.
Kingham. John Ernest,	Bank House, Grosvenor Rd., Aldershot.
Long. Alfred,	21, New Street, West Bromwich.
Moscrop-Young. Frederick Charles,	12, Buckingham Street, Strand, W.C.
Peirce. Peter,	30, St. Petersgate, Stockport.
Rowley. Joseph William,	92, Tooley Street, London Bridge, S.E.
Sandars. Ingalton,	23, Portland Street, Southampton.
Trotman. George,	20, Kingscote Road, Bedford Park, W.
Wilson. John Archibald,	92, Bath Street, Glasgow.
Winter. Frederick Joseph,	37, High Street, Southend-on-Sea.
Winterburn. Archibald Herbert,	High Street, West Drayton, W.

As Students :—

Dennison. George Pedder,	22, Perth Road, Finsbury Park, N.
Eatwell. Francis E. W.,	69, Blenheim Crescent, W.
Evans. Henry Llewellyn,	18, Greenfield Place, Llandilo.
Flanigan. John Gerald,	46, Great Victoria Street, Belfast.
Horrocks. Frank Grayson,	Victoria Hotel, Bury.
Kaula. William,	29, Wetherby Mansions, Earls Court Sq., S.W.
Owens. John Pryce,	Roslin, Windsor Road, Penarth.
Parkin. Joseph Henry,	The Lennies, Green Hill Lane, Alfreton.
Pascoe. Herbert,	c/o Miss Hinkin, Thomas St., Thomaston, Llandilo.
Snowden. Geoffrey Northing,	P.O. Box, 110, Klerksdorp, South Africa.
Thomas. Dan Wynne,	149, Cowbridge Road, Cardiff.
Thomas. John Richard,	Brooklands, College Street, Ammanford.
Thompson. Robert,	42, Market Street, Stourbridge.
Walsh. Arthur Thomas,	35, Oxford Road, Kilburn, N.
Watson. Thomas Milburn,	3, Lonsdale Street, Carlisle.
White. Herbert John,	17, Livingstone Road, Southampton.

Mr. G. Topham Forrest (Member), architect to the Northumberland Education Committee, read a paper on "County Council Schools: their general arrangement and method of building."

Mr. J. Fletcher Trew (Member of Council), Gloucester, in proposing a vote of thanks to the lecturer said the subject had been dealt with very fully, particularly from the important view of sanitation. The lecturer had said that Schools should be so designed as to train the youthful mind to a sense of the beautiful, but he thought that when an architect was appointed to design a school he found he had to contend with the point of view of the ratepayers, *i.e.*, that of economy, and it was very difficult to please both parties. The larger schools, of course, had the advantage of constant water supply and the town drainage, and were, therefore, bound to be more complete than schools in the country. Mr. Trew did not know whether the lecturer had had any experience with modern methods of construction, such as ferro-concrete, or other fire-resisting material. The question of heating and ventilation was almost a science in itself, and was a problem which had not up to the present been thoroughly thought out. In some schools the atmosphere was very oppressive, and in others draughty and cold. This was noticeable in small schools even more than in large ones. A great economy could be effected in the larger schools by providing one large central hall for the three departments instead of one for each, especially in a small town where money was a consideration. The Society was indebted to Mr. Forrest for his long journey to London in order to give them his admirable paper.

Mr. B. R. Tucker (Hon. Treasurer), in seconding the vote of thanks, thought the subject required a little more attention than he had been able to give it, but on the matter of ventilation he was of opinion that artificial ventilation was by far the best and most economical method provided it was properly arranged and well constructed. The inlets should not be too large, otherwise the rooms would be cold and draughty. Small inlets were preferable and more of them should be provided. There should also be radiators under the windows and the cold air should be brought in at the foot of the radiator and warmed there. With regard to the provision of a central hall he thought in most cases in the country a hall was unnecessary except where a large number of scholars was accommodated.

Mr. R. Guy Kirby, a.r.i.b.a. (Pietermaritzburg), said he had had an opportunity of visiting one or two schools in this country recently, and had been very interested. It seemed to him that in school planning too much attention was given to the price per head, so that the buildings gave the impression that the architect had secured the work mainly by attention to cubical contents and floor area. The schools he had visited were very much of the same character and none seemed to have been built with any view to impressing the child mind with beautiful forms. Mr. Forrest had mentioned that cesspools near a school were always a nuisance, but he had seen them close to large schools and they formed practically bacteria tanks, and were no offence or nuisance whatever. The whole question of drainage seemed to rest on the soil of the surrounding district. With regard to the flushing of the closets he thought mechanical flushing was the best means of keeping them clean, because every time it was used the closet flushed mechanically. With regard to ventilation there was a conflict of opinion. In one of the schools he had visited the teacher should have opened the windows at every change in the class, but during his visit the teacher forgot to do so, the consequence being that the foul air remained for the next class to breathe. He thought the best system was that of ventilating through the large hall.

Mr. W. T. Curtis, a.r.i.b.a. (of the Architect's Department, Middlesex Education Committee), said with regard to the use of radiators that it had been found that the openings between the radiator and the floor reduced the heat of the radiator a great deal. With regard to heating, the Pulsial system had been found satisfactory; the boiler could be placed in the roof, the water being set into circulation by a small head of steam.

Mr. Ellis Marsland (Hon. Secretary), said the whole discussion seemed to have centred round heating and ventilation. It was an important point with regard to schools and he thought a combination of hot water radiators with the open fire, was the best method of heating. On reference to the plans of the Middlesex Committee he found they did not adopt the open fire method, and inferred that they had some system of hot water. It rather surprised him to be told that in the North

of England they could build those schools at £10 per head, when it cost some £16 to £18 in London.

Mr. W. T. Curtis, A.R.I.B.A., said the price seemed to vary according to whether the school was an elementary or secondary school and in proportion to the number of children accommodated. Thus a school to accommodate 300 children would work out very much cheaper than one for 150 scholars. A school recently erected at Teddington was built at a cost of £11 per head, but that was for several hundred children.

Mr. Forrest said that what he meant in stating that the architect was tied down to £10 per head, was that the Education Committee thought they should be brought as low as £10.

Mr. R. Frank Vallance, F.R.I.B.A. (President), Mansfield, thought in regard to school sanitation that where they could get sufficient air, and they generally could in the country, a septic tank or properly constructed cesspool was the best means of disposing of the sewage. In towns they had not that difficulty to contend with. As regards the planning of schools, no doubt a central hall was often very desirable, but where infants only were concerned he thought it met the case to have a corridor from 12 to 16 feet wide. Mr. Forrest had stated that all floors were now made level, but he thought that for infants at any rate the floor should slope so that they could all see their instructor. He agreed with the lecturer in his remarks concerning the use of colour on the walls for the purpose of diffusing the light. The best way of admitting fresh air was through the windows themselves, and he thought if all the windows were made to open from top to bottom and were fitted with some gearing, the upper parts of them would at any rate be opened by the teacher at the change of class. In respect of heating he agreed with Mr. Marsland that open fire-places and hot water radiators were quite satisfactory, but in their smaller towns to cut down the cost to anything like £10 would not allow of such luxuries as fires and heating apparatus.

Mr. G. Topham Forrest, in reply to the enquiry regarding special construction, said he had in two schools put in ferro-concrete foundations, where he had very great difficulty to contend with in regard to the nature of the soil. With regard to the question of price per head, the lowest he had ever got was £10 12*s.* 0*d.* for 720 scholars, but it was a two storey building. Sixteen feet would be found sufficient for an infant's marching space as Mr. Vallance had suggested, at least for their smaller schools. With regard to the stepping of the desks the reason of their now being all level was the expense of the former method. In the Scotch type of schools the class room floor was gently sloped, which was perhaps the best way of dealing with the matter, although in that case the desks had to be fixed to the floor, and this created difficulties when it became necessary to transfer them.

County Council Schools:
Their General Arrangement and Method of Building.

By G. TOPHAM FORREST (Member),
Architect to the Northumberland Education Committee.

SINCE the passing of the Education Act, 1902, the provision of educational buildings has become one of the most important duties devolving upon County Councils, and in presenting this short paper for your consideration, I must first ask for your kind indulgence, owing to the fact that it merely consists of the personal experiences of the writer in that particular branch of County Council work. So much has been said and written about the architecture of educational buildings that it is no easy task to continue the subject without feeling oneself on familiar and well-trodden ground.

On the present occasion, therefore, it is my intention to endeavour to give you some idea of the conditions prevailing in the average country school throughout England, where the school work of the nation was carried on, previous to the Act of 1902, with a few notes and suggestions on the design and construction of such buildings generally.

After the passing of the Act, and prior to what was termed " the appointed day," most of the County Councils throughout England had exhaustive surveys made of all the school buildings within their administrative area, including all the non-provided schools of every denomination, so as to form some idea how the buildings stood with regard to sanitation, water supply, heating, lighting, ventilation, planning, and state of repair generally.

This work as you will readily understand was a very large order, especially in some of the larger counties, and one which entailed a very considerable amount of labour. Very exhaustive reports were drawn up by county architects and others, and as it fell to my lot to assist at that time in the compilation of reports, embodying detailed inspections of nearly 1,000 of these buildings, I claim to possess a particular interest in the subject.

This paper is not intended to outline the history of our public elementary schools. It is, however, necessary before dealing with the condition of the buildings to preface my remarks with a little explanation as to the difference between the Church and the erstwhile Board Schools. The field of elementary education before the Act presented one curious anomaly. There were two classes of schools, both doing the same work on almost identical lines, teaching a similar class of children, both undergoing the same inspection, and receiving grants from the Government, yet one of

NORTHUMBERLAND COUNTY COUNCIL SCHOOL, WESTERHOPE.

NORTHUMBERLAND COUNTY COUNCIL SCHOOL, NEWBIGGIN-BY-SEA.

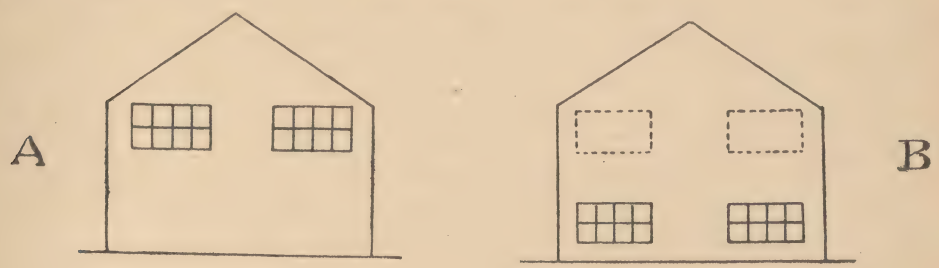
which had a continual struggle to make both ends meet as it were ; while the other depending on the rates had practically all the money it required.

Speaking generally of the dilapidations in connection with these schools, in the rural districts, I found that the Board Schools as regards state of repair, etc., were as bad, and in many cases worse, than the non-provided schools. This, however, could not be regarded as a hard and fast rule, because in urban districts and towns the non-provided schools were quite 30 per cent. worse than the provided schools.

These inspections showed that the existing condition of things was far from satisfactory and that the late rural board authorities, in many cases, must have sadly neglected their duties. In the case of the non-provided school buildings, these through lack of the necessary funds, were wanting to a great extent in modern requirements, with the result that instruction was being imparted by teachers labouring under many difficulties and disadvantages, making efficient organisation practically impossible.

The system of periodical inspection of the condition of these buildings by educational experts appointed to examine the children, was in so far as I could see, the only system of architectural inspection in vogue at that time ; and when the report of the Government Inspector was received, pointing out certain defects in the premises, the managers usually rectified these as best they could without the assistance of any professional advisor, the cure being in many cases worse than the evil.

To illustrate this, I will mention two things which amused me very much at the time. A little school in the country was very badly lighted on one side by two tiny windows near the roof. The managers were asked to lower the windows, but as they were not specifically asked also to enlarge them, they made the lighting still worse by taking out the windows, bricking the openings up, and removing the windows near to the floor thus :—

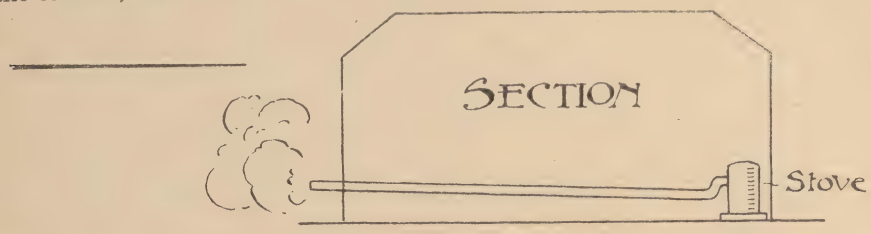


A. Before the report was received.

B. After the report was received.

Many of you are no doubt aware that stoves are only approved when provided with chimneys as in the case of the open fires, and you all know the abominations of the stove pipe. In a case where the managers were asked to improve the warming

of a large room, they attempted to do it by placing a slow combustion stove at one end of the room and carrying the stove pipe the whole length, just above the head of the teacher, and out at the other end :—



Very serious mistakes were sometimes made in matters of ventilation, *e.g.*, placing Tobin's tubes upside down; and I remember having to condemn a room because the outlet ventilation was through the roof into a bedroom occupied by the master's children. The stove pipe was also carried through the bedroom, and there were many other instances, but these will suffice as showing the necessity of expert advice.

Sanitation. System of Closets in Schools.

In connection with the sanitation of schools in 50 per cent. of the buildings I visited, the form of school closet in most use was either an open or closed midden privy. These were usually, but not always, situated in localities having no water supply, or public drainage system. Many of the midden privies were continually to be seen full, very filthy, foul smelling, and in a shocking state generally. Some of the middens were cleaned out monthly, others half yearly, and many were not cleaned out for periods extending over twelve months. The result of this was that in many schools visited it was found that the effluvia penetrated the school according to the direction of the wind; these privies consequently became abominations.

Various types of mechanical earth closets were in use, but in nearly every instance I found that after this form of closet had been in use some little time the mechanical gearing got broken, and the receptacle became useless in so far as the supply of earth was concerned, this being due, no doubt, to the mechanism being within reach of the scholars, and to the very inquisitive nature of children.

The tub, pan, or pail closet was not so common, although found in many schools. This was certainly an improvement on the very insanitary and unwholesome midden privy. With regard to the various forms of midden privies, *i.e.*, covered midden privies, and open midden privies, although the Board of Education still sanction their construction in remote districts, these without hesitation I think ought to be condemned as utterly unfit for the purpose. I have always considered these middens abominations, although, I am sorry to say, they are still looked upon with favour by many rural authorities, probably because they require less looking after.

For all practical purposes, and especially for the sake of cleanliness, I think the pail or tub is the best type of closet, if it can be cleaned out every few days. In urban districts this can be managed, but in rural districts someone ought to be made responsible, otherwise, the nuisance is not mitigated.

Dealing with schools situated in districts having a public water supply, but no main drainage, where water closets were used, the problem of disposal was generally solved by the use of the cesspool. Into this cesspool was taken the crude sewage and the effluvia from the urinals. The cesspools were in nearly every case of poor construction, and in four or five instances, I found them in close proximity to drinking wells in the playground of the school. Cesspools, I am sorry to say, have still to be resorted to under certain conditions, but they are at all times a nuisance, and as lavatory waste has to be treated as soil drainage, they soon get filled and the contents have to be continually pumped out as the Local Government Board prohibit overflows. The more perfect systems of sewage disposal are difficult to apply on a small scale, but the modern bacterial method of purification by septic or sewage disposal tanks is advisable for the larger new schools erected under adverse conditions of public sewage disposal, and if the initial outlay is a little more expensive the cleanliness of the system will amply compensate for the expenditure. I would strongly advise the use of septic tanks, as my experience with cesspools during the last three or four years has been anything but satisfactory.

In coming to the last class of closets, viz., those on the water carriage system, what are known as trough closets seemed to be the most common variety in use. This closet has its disadvantages as a form of water closet. Where excreta is allowed to remain possibly for many hours, it is one which should be used with great discretion and care. Forms of connected closets are, however, trapped from each other by the water standing in the pipe between. These are technically known as latrines, and are emptied by a syphon discharge. This is a great improvement upon the trough closet, but this system also has its disadvantages, in so far as many children can use the closet before the automatic flusher goes off, and so in order to further improve matters, I have been the means of introducing into schools throughout the County of Northumberland a type of closet very similar to those used for lunatic asylums. This closet is specially adapted for children, being narrow and elongated in shape. The elongation of the basin means less soiling of the back, and easy flushing giving a very satisfactory flush with two gallons of water. The inspection cap is large to admit of easy access in case of chokage, but there is less temptation to put articles into this form of closet, than into the open multiple type. The cistern is easy to pull, and the smallest child can set up the flush. The pull working through the C.I. guide ensures that no mischief can be done by the children or damage to the walls. I must admit that I dreaded somewhat the introduction of this variety, on account of the children forgetting to pull the handle after use; but the result was entirely satisfactory, and has been most encouraging.

A word about urinals is necessary. In the past, far too little attention has been given to their construction. Very few were satisfactory from a sanitary point of view, and in direct contravention to the rules of planning issued by the Board of Education. Speaking generally, they consisted of either an open channel, or a primitive sort of trough without any proper lining or divisions. Some were flushed by rain water conducted usually in an iron pipe from the eaves of the offices, others were flushed in a perfunctory sort of way by hand, but by far the greatest number had no arrangement whatever for cleaning purposes, nor had they any system of flushing.

School urinals to be satisfactory should be properly divided, and made of some impervious material, non-absorbent, with a lining of cement, or better still, if money will permit, enamelled fireclay, and with an adequate supply of water for flushing purposes. Slate should never be used unless treated with coal tar to prevent absorption and scribbling by the children.

There were few efficient systems of drainage laid down to these schools, the majority of cases showing a lamentable lack of system. In only a very small percentage of the schools were the laws of sanitation observed in this respect. As regards rain water one of the commonest methods was to store it in tanks or wells, but the water I found was seldom put to any practical use. The wells were usually covered up, and only the teachers knew the existence of them. It was noticed in many cases where the rain water was taken to the public sewer that the down spouts acted as ventilators for the sewer, being joined directly to the drain without a properly trapped gully at the ground level. With regard to soil drainage and drainage work generally, experience has taught that the system of entrusting the construction of drains to odd labourers with intermittent supervision is fraught with evil consequences. There can be no doubt that in most of the rural districts, unprofessional labour has been largely employed, chiefly for the sake of economy. The village carpenter has been responsible for all sorts of alterations and additions to buildings; and the construction of drains has been left to the agricultural labourer. In the drainage of many of the country schools no scheme had previously been prepared, and in the majority of cases the idea of getting access to the drain had been entirely disregarded. The laying down of a proper and efficient drainage system to all our schools in need of such is a large undertaking. Sanitary reform in this direction is an urgent necessity but will require time.

Water Supply.

Many of these schools had no proper supply of drinking water, in other cases water had to be brought to the school from a considerable distance and this condition of affairs still exists in many districts. Where wells exist either within the curtilage of the school or in its vicinity, they should be properly looked after as regards

periodical examination and cleaning. The position of a well in relation to a cesspool, should always be carefully investigated, and this applies more particularly to rural districts, where very often wells are to be met with dangerously near to very filthy cesspools. Where water has to be obtained from wells or springs too great care cannot be taken to avoid all sources liable to become contaminated.

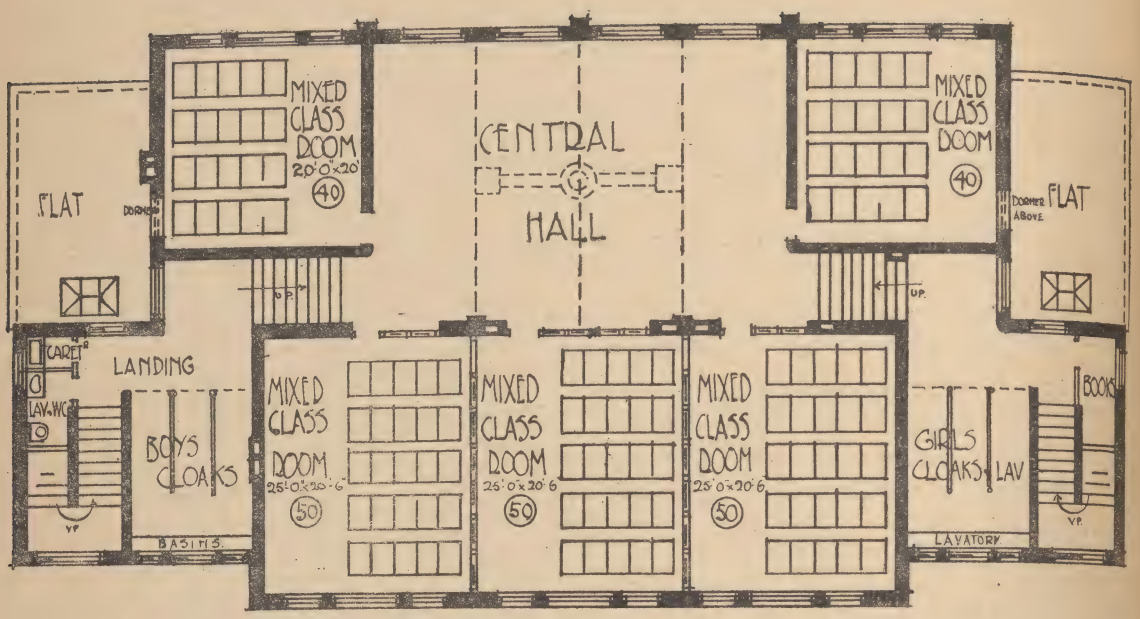
Planning.

Upon examination of the various types of schools it was evident, at least with regard to non-provided schools, that in their design they had been regarded from the point of view of providing the minimum accommodation, and to just comply with the requirements of the Board of Education. The schools were so numerous and their types so various, that a good opportunity was afforded of tracing the development of school planning from very early examples to buildings of recent construction. Many of them still exist of the old fashioned long narrow schoolroom with the various classes screened from each other usually by curtains. The reason of this type of plan is obvious as owing to expense the teaching had to be carried on mostly by pupil teachers, the headmaster supervising these teachers, while he himself was engaged in teaching. A very common plan was the L shaped room, this had a porch used as a cloakroom, and common to both sexes. When the number of scholars increased in a school of this description another classroom was added, and a passage possibly converted into a cloakroom. Then other classrooms were added as occasion required, and any convenient building space filled up without taking into consideration the question of organisation until at length the school became a mass of classrooms opening one into another, with the result that children wishing to reach their conveniences had to pass through two or three classrooms, thereby disturbing the work of three or four classes. The evil is apparent in some of the newer schools also, and arises from the fact that little or no thought was given to corridor space, or to the important question of future enlargement.

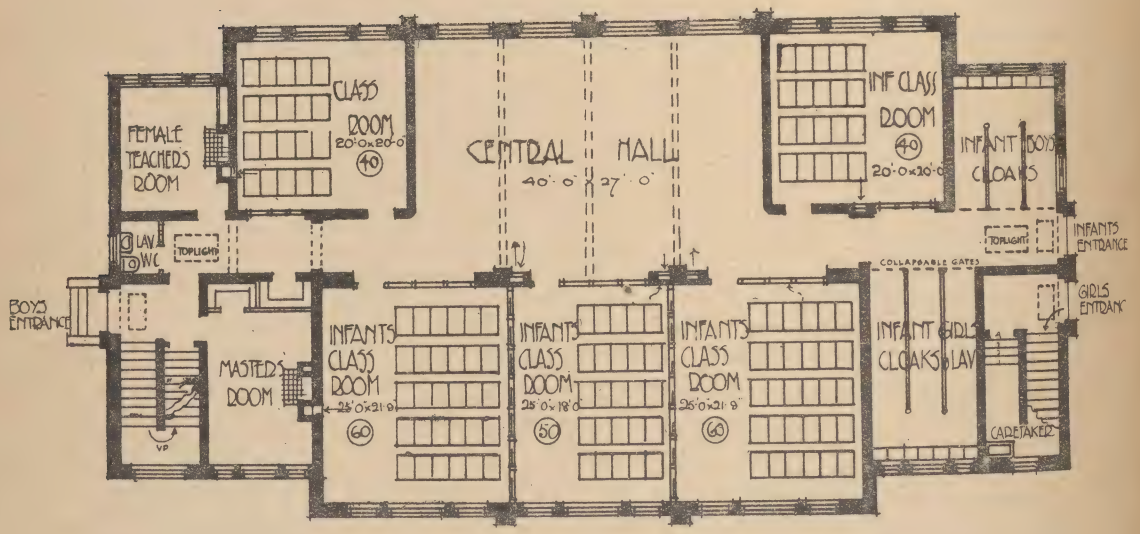
Coming to the council schools of to-day, these are now invariably planned either on the corridor or the central hall system. Recently the question has cropped up as to whether the advantages of a large hall adequately compensate for the additional expense involved in its erection. Some local education authorities seem to think the provision of a hall indispensable, others have done away with it altogether for various reasons, but as the question is still being discussed I beg to offer you my views.

Personally, I have always favoured a large hall to schools of 300 and upwards. My argument in favour of its use being that it materially helps the ventilation of the classrooms during the winter months on account of the comparatively small area architects are limited to at the present time in the designing of these rooms.

The hall can always be kept freshly ventilated and the glass screens between it and the classrooms made with opening sashes so that the air can be drawn into the



FIRST FLOOR PLAN.



GROUND PLAN.

NORTHUMBERLAND COUNTY COUNCIL SCHOOL. NEWBURN HALL.

classrooms. I hold that assembly halls act as large air wells to the various classrooms, more especially if one side has an external wall well supplied with large windows all of which can be made to open and having the extract shaft in the ceiling under control. The temperature can be kept lower than that of the classrooms by having a separate circuit from the boiler. The argument in favour of ventilating classrooms through the central hall is that fresh warmed air is admitted through both sides of the room over the radiators in the outside walls of the classroom, and through the screens dividing the room from the hall. If the ventilation and temperature of a hall such as I have described were properly regulated the ventilation of the classrooms would be materially helped, especially in the winter months when it is impossible to open the windows, and where the fresh air openings behind the radiators are entirely deficient for the needs of the full class.

Apart from the teacher's point of view, other advantages of the central hall are that the glazed screens between it and the classrooms help considerably in the lighting of these rooms. The light from this side is shaded leaving the chief source of illumination from the left. By doing away with the central hall and substituting a low corridor, as is done in some of the more recently erected schools, so as to get the opposite walls of classrooms external walls with windows in each wall, I am of opinion that in such a scheme there must and always will be considerable risk of the lighting from the right hand being too strong for the scholars.

With regard to the disadvantages of the scheme, the greatest drawback is in the expense, especially in schools of one department of about 300 children, very often bringing the cost up to £13 or £14 per head.

When more than one department has to be provided for, the expense is obviated to some extent by the Board of Education allowing one hall to be used at different times by the two departments. The hall surrounded on all sides by classrooms is bad. It is impossible to keep such a hall adequately ventilated except by mechanical means. Another drawback is that in stormy weather it forms a snow trap which seldom gets cleaned out. There is always the possibility of water collecting in the hidden gutter, which is always difficult to get away. To obviate this it would be necessary to keep the hall high which adds considerably to the expense. In a county like Northumberland, subject to very severe winters, I find this a serious reason against the use of a hall surrounded by rooms, and I have discarded this type of plan altogether.

The hall with one of its sides an external wall also has this disadvantage, though in a lesser degree, and in my opinion, it is more than compensated for by its advantages.

Sanitary Conveniences.

Up to the present time the popular position for the offices is in a corner of the playground, and children must pass through the open air to reach them. This

arrangement is now only found in elementary school buildings. It has long since been abandoned in secondary schools. The regulations of the Board of Education insisting that the offices should be at a distance from the school building was all very well when we recollect the low, dark, unwholesome, and foul smelling privies, the sanitary arrangements of which, as I have shown you to-night, were of the most primitive kind. Now, however, when our fittings are of the most improved modern type, this regulation is no longer necessary. So long as these closets are disconnected from the school building proper by a well-ventilated corridor, no possible danger to health can arise from connecting them to the school building, and I am very hopeful that in the near future the Board will amend their regulations, and cease from inflicting the hardship of sending children, especially the small ones, out from warm classrooms across an open playground in wet and cold weather.

Cloakrooms.

All cloakrooms should be near entrances and have cross ventilation. 12 in. apart for cloakhooks is allowed in secondary schools, and 6 in. in elementary schools. If 12 in. is a reasonable distance for the garments of the well fed, surely 6 in. is too little for the poorer and less cared for child. Reform here again is necessary. Mats and scrapers should always be placed immediately inside cloakrooms, so as to prevent as much dust as possible getting into the school. Mosaic floors, if properly laid, are the best, but ordinary cement concrete is quite satisfactory and much cheaper. No school should ordinarily be built to accommodate more than 1,000 or 1,200 children in three departments. No single department should accommodate more than 400.

In planning a school attention should be concentrated first and foremost upon the arrangements of the classrooms. As regards size of classrooms the tendency now is to reduce these as much as possible. It is very common to find schools with all the classrooms of the same size, say to accommodate 60, and I venture to think this is a mistake. Rooms should be graded. For instance, more children would be in Standard I., than in Standard VI., therefore, the former standard would occupy a room, the accommodation of which is 60, while the older pupils would occupy rooms designed for 40 or 50. This, I think, is a good method, but is based, of course, upon the assumption that every class has a fully qualified teacher and a room to itself. With regard to the floors of the classrooms in many of the schools I visited these were stepped. This form is now obsolete and in nearly all schools now being erected the floor is level. Every school must be planned so that the children can be seated in the best manner for being taught. The rooms must be grouped compactly and conveniently so as to secure proper organisation and supervision. It is important to remember that the accommodation of every room depends not merely on its area, but also on the lighting, the shape of the room and the position of the doors. Rooms

should be planned as nearly approximating a square as possible. Care being taken that sufficient width is left for the desks and gangways, as desks for elementary schools are all now made to a standard size, viz., 3 ft. 4 in. for older children, and 3 ft. for infants. Glazed bricks or tiles have up to the present time been the most suitable material for dados on account of the small upkeep in the way of maintenance, but now some authorities on school work have stepped forward and protested very strongly against the use of glazed surfaces for classroom walls. The reflected light on their surfaces may have something to do with it and being non-porous may not be considered hygienic for crowded rooms; but this is a matter of opinion and personally I favour glazed bricks or tiles.

Warming and Ventilation.

In most of the old familiar schools of the L shape type, the ordinary fireplace is still one of the most common means of heating. It is of course cheerful and healthy on account of the ventilation ensured by it, and it is surprising what a number of schools are solely dependent upon these open fires for getting rid of the foul air. This form of heating, however, cannot be regarded as sufficient. Uniform warmth can never be obtained in a room heated by fires only. A great evil of the open fire is the current of cold air continually passing along the floor level causing cold feet to the children. If open fires have to be put in the following points should be attended to :—

(1) Firebrick should be used instead of iron.
(2) The fireplace should be narrower with the back leaning forward.
(3) The space beneath the fire should be closed.

Ventilating grates are useful if no provision has been made for warming the cold air as they have great warming power and good control of combustion.

Stoves.

If stoves are not properly constructed this is a very dangerous form of heating. Stove flue pipes are very often constructed in the worst possible way, the flue stack running up inside the room, instead of being taken horizontally through the wall at the level of the stove and then carried up the outside of the wall. The joints of the flue pipes are very often slack, the metal itself pervious with time and wear, emitting into the room products of combustion that must be and are detrimental to the health of the scholars and teachers. Ventilating stoves such as " Musgrave's " or " Shorland's " patent, give very satisfactory results, but here again care in fixing is necessary.

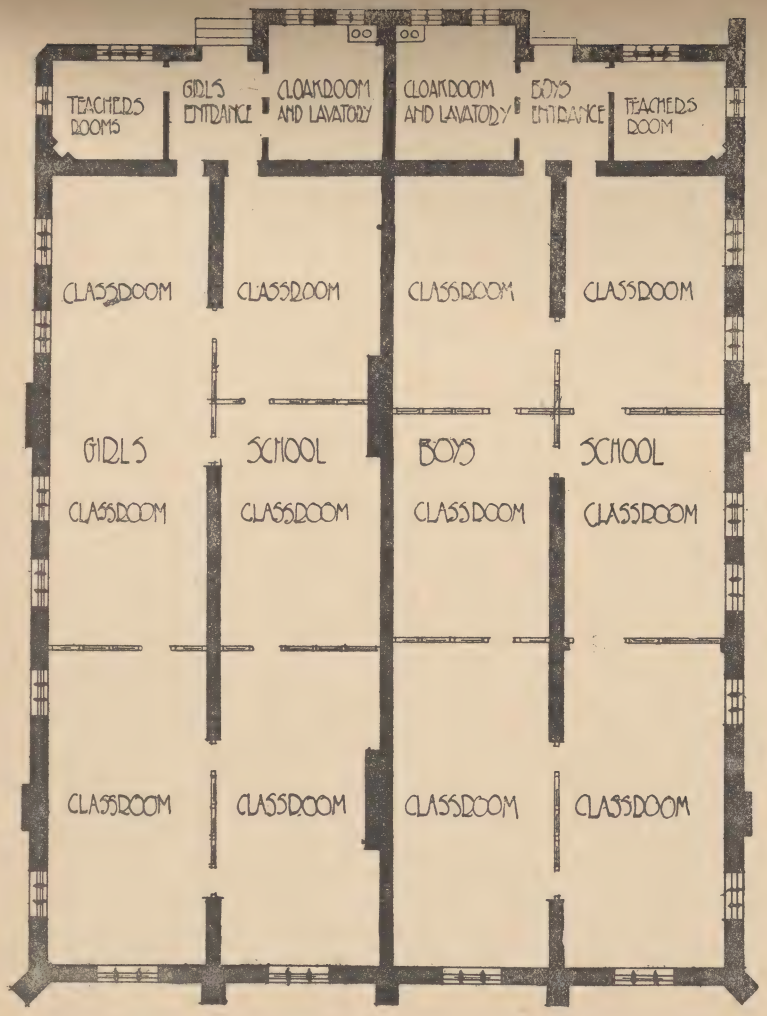
High and Low Pressure Hot Water.

Heating by hot water constitutes one of the best and simplest means of warming schools. The low pressure system is more prevalent and I would point out one great

thing in favour of this system, and that is the adaptability to any method of ventilation. The practice of arranging hot water pipes in channels below the floor with perforated iron gratings at the floor line, was commonly met with, but should be condemned. It is dangerous, tends to uncleanliness, and there is always a great loss of heating power.

In connection with laying down low pressure installation always see that the basement heating cellar is properly drained, and beware of getting the same flooded after a heavy rain. This is a perpetual worry to anyone having supervision of a large number of schools. Where the sewer is too shallow to take away the water, I have recently adopted a system of low pressure heating, having the boiler on the ground floor level, but as the work is not yet complete I cannot speak as to its merits, but I am very hopeful as to the result of the experiment.

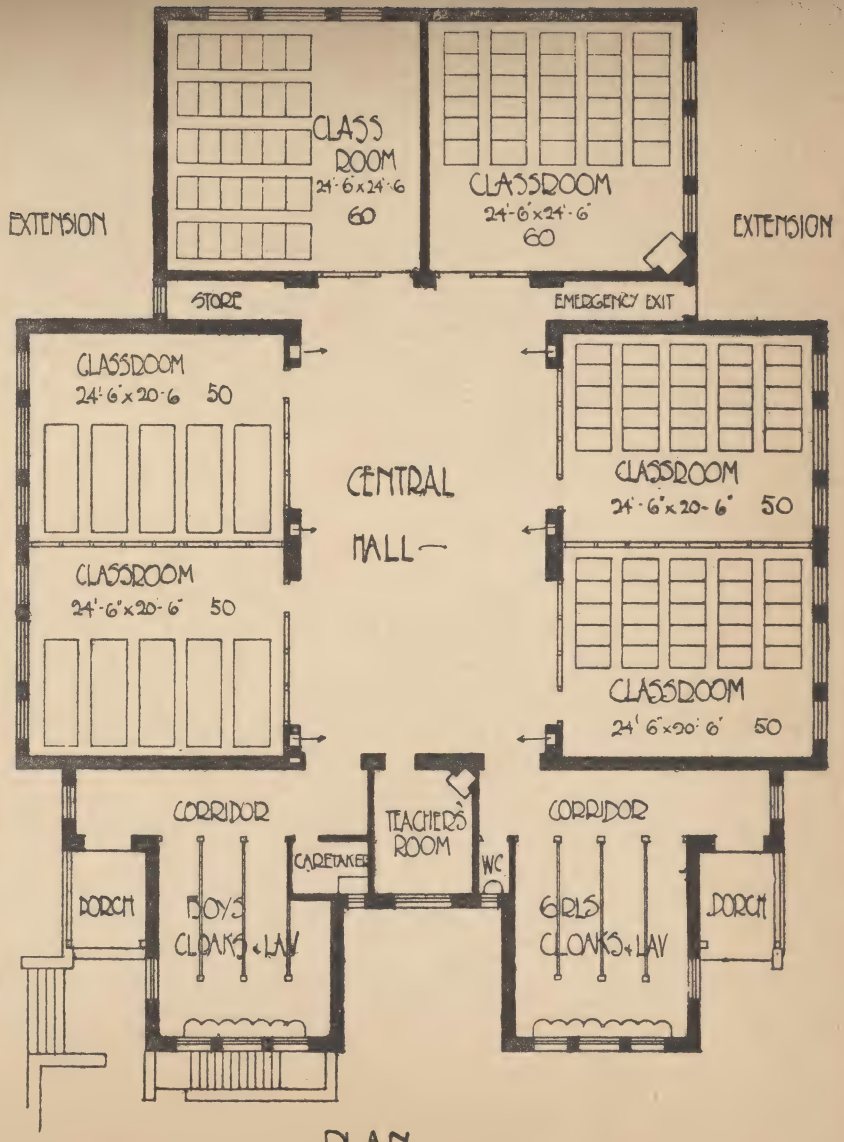
With regard to ventilation this is such a complex problem that in the short space of time available for the reading of this paper I can do no more than direct your attention to the weak places I found and give a few suggestions for remedying them. I regret to say that in nearly the whole of the schools I visited, the elementary principles of ventilation were entirely absent. Take for example a school where the only means of ventilation is the fireplace and window, in some instances, and the windows only in others. The supply of fresh air has been found to be deficient. The exhaled organic matter has made the badly ventilated rooms very offensive, and the methods taken to rectify them have been as follow :—One or two short forms of Tobins' tube wall inlets have been inserted of absurdly small sectional area about 10 in. by 5 in., and indiscriminately as regards position in relation to windows and fireplaces. These instead of improving matters become the source of excessive draughts on account of the great velocity with which the air entered the small apertures. The result of this was that the wall openings were continually kept closed. The majority of the teachers never complained, as being themselves in the room no offensiveness was noticed, and this no doubt explained the tolerance of such a state of things. The Board of Education state that these inlets should provide a minimum area of $2\frac{1}{2}$ square inches per head, but as far as my experience goes this is not nearly sufficient for a school possessing no means of artificial ventilation. When these inlets are required as an additional means of providing fresh air in order that the air should be admitted at a normal velocity not exceeding 5 ft. per second for an ordinary classroom of say 60 children, the total area of inlets required should approximate 1,440 square inches, this being equal to an opening of 10 square feet. The fresh air to a classroom, however, should never be admitted through a single inlet, but should be relatively distributed to ensure proper diffusion. Personally, I am not an advocate of these fresh air inlets. Let the whole area of the classroom window be made to open, let the window openings be large and have the same regulated by means of rod gearing, and at the end of every hour or at



PLAN

SCALE

TYPE OF SCHOOL NOW OBSOLETE.



PLAN

NORTHUMBERLAND COUNTY COUNCIL SCHOOL, WESTERHOPE.

every change of class throw the whole window open and the air in the room will be quite fresh in less than five minutes. A word of warning however. Never open windows by means of fastners, attached to cords, if it can possibly be avoided, for in less than a month from the time they are fixed they will get out of repair, so much so that the teacher will cease to struggle with them and consequently the windows will remain shut during the various changes of lessons. Rod gearing properly controlled and attached to the whole of the opening sashes, even although it is a little disfiguring and a trifle costly, is an admirable arrangement and one in which I have observed the teacher never forgets to carry out his duty of ventilating his room at the proper times.

Outlet Ventilation.

It is an undoubted fact that in many schools the smoke flues from the fireplaces formed the only means of outlet ventilation, the windows in most cases acting as inlets. In addition to the fireplaces there were two methods usually adopted to carry away the foul air. The first method consisted of perforated openings into a false roof without any proper ridge exhaust ventilation to carry the foul emanations away (a deadly practice but exceedingly common). The second method consisted of outlet openings in the ceiling of similar description as the first method, but with a communicating shaft from these openings to the external air, and provided at the ridge level with some form of exhaust ventilator or revolving cowl.

With regard to the first method of getting rid of the foul air, no condemnation is too severe. The space between the false roof and the ceiling becomes an air chamber, and is usually allowed to become exceedingly dirty. Air drawn into these, therefore, can scarcely escape contamination, and this air is very often breathed over and over again.

The second method is satisfactory provided of course that sufficient air is given to the outlets. Twenty square feet should be the total area for inlets and outlets to an ordinary classroom.

Artificial Ventilation.

As there is such a great difference of opinion on this form of ventilation, and so much has been written for and against it, that I think each school should be treated on its merits. I have been speaking of country schools usually of one story, and if I attempted to mechanically ventilate such schools I would get into serious trouble on the score of expense. It is, however, something to know how much air is needed by a school and to furnish this by exact mechanical means.

In dealing with the ventilation of a school, the three main points to consider are :—

(1) Area of floor to be provided for each scholar.
(2) Cubic capacity of the room.
(3) Number of cubic feet per minute which must be brought in and then exhausted for each scholar.

Lighting.

The principal causes of darkness in the schools which these inspections revealed were: insufficient size of windows; windows wrongly placed, *i.e.*, in a corner; lighting area insufficient; classrooms too narrow to give a sufficient angle of light; further extensions built regardless of position; trees obstructing the light; mullions too heavy, so that shadows were cast; panes of glass too small.

The following questions if attended to might be beneficial in remedying defective lighting, especially in schools already built :—

(1) Can children get direct light from the sky by means of windows?
(2) Is the ratio of window glass to floor surface sufficient?
(3) Are the windows on the left hand of the scholars?
(4) Is the colour of the walls or the ceiling too dark?
(5) Have the desks been arranged in accordance with the best possible lighting?

In selecting a site for a school, high ground should be chosen, as it affords more light on account of the height of obstructions being reduced, and it also gives freer play to the sunlight. The provision of land for a site should always be made on a generous scale. On building a school, it must always be assumed that the building is to be lighted on all four sides and enough land secured so that the distance from obstructions is sufficient. Windows should always be as large as possible, and the sashes should be glazed with clear glass.

Then always remember that the best light for a classroom comes from the upper part of the windows, on that account the windows should extend as far towards the ceiling as possible. In the older schools it is not unusual to find two or three feet of wall space between the window head and ceiling.

With regard to the internal colouring of schools, the plastering of a building should diffuse the light. It should, therefore, be tinted some very light colour almost white. Walls should be coloured with very light tints of buff and green.

Artificial Lighting.

In all county schools where no supply of gas is obtainable some form or other of oil lamps must be used.

Great care should be taken that a tight-fitting wick is used. Many of the oil lamps especially the more expensive kinds have their reservoir placed in cup shaped sconces fitting very loosely to allow of their ready removal. This constitutes a source of danger. For some little time now, I have been considering the relative merits of the systems of gas and electric lighting in council schools. Gas lighting by common burners has been practically superseded by the introduction of incandescent mantles with good results. As regards hygiene, electric light possesses many advantages over gas, but the cost of maintaining is about 50 per cent. higher.

There is now, however, on the market a new metallic film lamp in place of the ordinary incandescent which I am told will effect a very great saving in the consumption of current.

Folding Partitions.

In supervising the fixing of folding partitions there should be no large objectional trough or channel or any unsightly iron straps, and where a trough or channel is used such a channel must on no account be cut out of the wood floor of the schoolroom, but a straight board must be put down in direct line of partition with blocks, through which the maker of the screen must cut his own groove.

Essentials of Design.

In conclusion, I would ask your assistance in strengthening the weak places in school planning some of which I have drawn your attention to to-night. Many there are which I have not mentioned, but we must progress step by step, and while pleading for more thought to be given the real essentials of school design, it must be admitted that any aspirations which architects have in this direction would be very much aided, if the public who are our clients could be got to think and see more justly about the essential qualities of the design of schools. Why should the expenditure of our school buildings be cut down to the minimum of cost per head, and why should the cry always be for bare utilitarianism, and £10 a school place.

At the age of six when the average child first goes to school, practically everything he sees is new and interesting and worthy of deep consideration. His brain gets no rest from the time he wakes to the time he goes to sleep at night, surely then our schools ought to be things of beauty.

Educational buildings must always furnish a most imposing factor in the social structure of a community.

In England one sixth of the entire population is enrolled as pupils in our elementary schools. It is obvious, therefore, that the institutions designed for the training of these to whom the destiny of the nation is to be trusted, should be safeguarded at every possible point.

The Royal Sanitary Institute Congress, Cardiff, July 13th to 18th, 1908.

Mr. Cholton James, F.R.I.B.A., Member of Council, and Mr. David Morgan, F.R.I.B.A., Past Member of Council, will represent The Society of Architects at the above Congress.

The Society of Architects.

Examination, October, 1907.

Section IV.—SANITATION.

WORKED ANSWERS by C. H. MEAD, M.R. San. Inst., Examiner.

Question 1.—*State how water may become contaminated in Wells and Cisterns, and what precautions you would take to avoid this possibility.*

Answer 1.

Contamination in wells may arise from leaky cesspools or drains, manure heaps, privy middens, pigstyes, foul pools, ditches, or contact with animals or birds. To avoid this, the position of the well should be such that the underground water which feeds it flows from the well towards any of the surroundings from which contamination might arise. The well should be sunk in impervious strata or steined with brickwork in cement with a clay puddle backing, or lined with large stoneware pipes jointed in cement. For deep wells, Artesian tubes are used.

The brickwork or other lining should be carried above the ground level to form a kerb. A stone cover should be fitted, and a pump fixed.

Water in cisterns may become contaminated by the cistern itself being made of the wrong material, for instance, lead, especially where the water is soft, or by dirt and dust, dead animals and birds, foul air, etc. Enamelled iron, glazed stoneware or galvanised iron are the usual materials now used.

The cistern should be accessible for cleaning, etc., by being placed in a cool, airy and light place, and should be covered and ventilated and protected against foul air. The overflow must discharge in the open air, and be fitted with a metal flap. It should be in such a position that foul air from any plumbing or drainage cannot enter. The service pipes must not enter directly into a w.c. apparatus, but must be connected first to a flushing cistern.

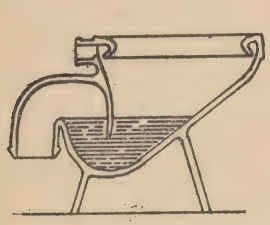
Question.—*What are the chief points to be considered in designing a good Water Closet Apparatus? Give sketches of at least three recognised forms.*

Answer 2.

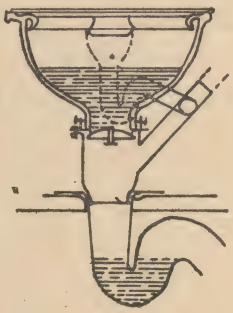
The chief points are the formation of the pan, which should admit of the excreta falling clear of the sides, and should hold a considerable amount of water. The outgo should be smooth and rounded, with no projections or angles which might become contaminated.

The flush must be distributed equally so as to wash the basin out, and except in the case of valve closets, the water should pass quickly through so as to convey everything through the trap.

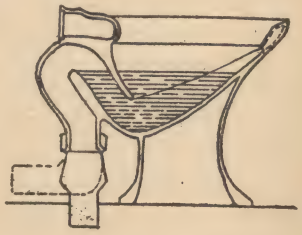
The trap below pan must be self-cleansing with a fairly easy bend. There must be a sufficient seal of about 1½ inches.



WASH DOWN CLOSET.



VALVE CLOSET.



SYPHONIC CLOSET

Question 3.—*Give a detailed description of how you would test the Drains and Plumbing Work of a house by means of the smoke test.*

Answer 3.

The smoke test is applied by means of a smoke generating machine or smoke rockets used at some convenient point, such as the fresh air inlet on the house side of the interceptor, or at any trap after removing the water seal.

If only a portion of the drainage is to be tested, that piece must be plugged off, and care must be taken to see that the gullies have their proper water seal. The soil, ventilating, and other plumbing pipes should afterwards be dealt with under similar conditions.

The smoke generating machine should be applied to the foot of the pipes, the top of which must be plugged after the smoke appears. Sufficient smoke can usually be generated to test the drains and plumbing of an ordinary house at one time. During the testing, careful observation should be kept for leakage from joints, branches, closets, etc., or unexpected places.

Question 4.—*Give your views on the respective uses of Iron and Earthenware Drains. State fully the disadvantages and advantages of each.*

Answer 4.

Where a drain is to be carried under a house or where the position of the main sewer requires the drain to be supported above the floor level, say as in a basement, iron drains are preferable to stoneware. They should be fixed so as to be easily accessible for inspection, and carried straight through the house with no internal connections.

The advantages of iron drain pipes are that being made in longer lengths than stoneware they require less joints, and the latter being of lead are watertight and not liable to be broken by the filling in.

The disadvantages are greater cost, and liability to rust. The latter, however, can be remedied by the use of a protective mixture such as Dr. Augus Smith's.

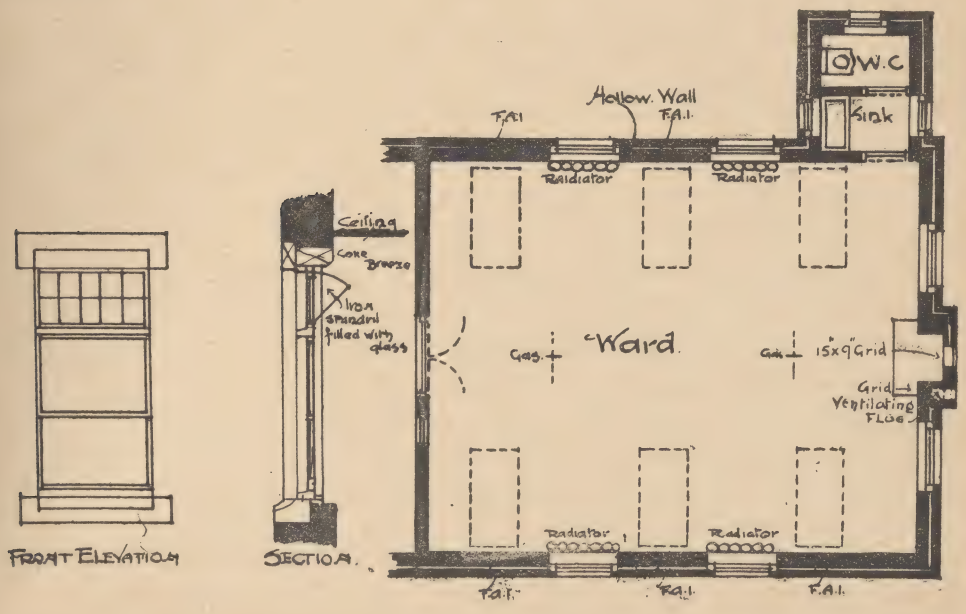
The advantages of stoneware pipes are economy in first cost and labour, the work being often done by a labourer as against a plumber and mate. There is also no risk from rust, and they can be easily cut.

Question 5.—*How would you provide for heating and ventilating a Country Hospital Ward containing six beds? Illustrate your answer with a plan and other sketches.*

Answer 5.

A Ward of this kind could be heated with a patent warm air ventilating grate with controllable grating and valve, and with low pressure hot water radiators, as indicated on sketch.

The ventilation could be effected by means of a flue built in the chimney with wall face ventilator fixed at its base, nearly on a level with the ceiling, fitted with controllable flap, and with two louvres fixed at sides at top of chimney. fresh air inlets to be fixed where shown, under beds, with controllable flaps, frames and external gratings. The windows to be ordinary cased frames up to transom, but with deep bottom beads. Above transom to be filled in as fanlight hung at bottom, and falling inwards into wrought angle iron spandrils filled in with glass, as sketch.



Registration, or Statutory Qualification for Architects.

Opinion in New South Wales.

MR. GEO. A. ROBERTS, Fellow of the Institute of Architects of New South Wales, in a paper read before that body says, Statutory Qualification and Registration combined is the proper protection for both public and profession; as with Statutory Qualification or a Government Diploma only, it is optional with the architect to qualify and the charlatan continues to carry on; while with Registration only there is little protection for either side, as almost anyone may pay his fee and receive his License.

With Statutory Qualification and Registration combined, a standard of efficiency is ensured, and a control obtained over professional practice which, while it enables the public to distinguish between the qualified and unqualified, is a protection to both from the dishonest, reckless, and incompetent.

A license does not appeal to the artistic taste of the architect.

Statutory Qualification and Registration may be divided into two classes, viz. :—

(1) Associate System. (2) Board System.

The Associate System, whereby the control is in the hands of an Association or Institute, does not commend itself to me, as is seems to savour too much of the "Glorified Trades Union."

With the Board System, all architects must be up to a certain standard, both as to ability and actions, and while the Institute could be kept select, the two bodies, though acting independently, could be of mutual support and assistance, and both help towards the advancement of the profession.

The extent to which a Board can control may be judged from the fact, that in Illinois, U.S., two architects had their licenses revoked for dishonest practice in placing an architect's seal on plans made by other persons.

Vested Interests must be Protected.

The question of Vested Rights must be accepted from the start.

It simply means, that every architect who is actually in practice at the time must be permitted to continue; otherwise, there is no hope of getting a bill through Parliament.

The first effect of a Registration Act would be to put a stop to any further increase in the number of incompetent practitioners, and thenceforth they would become a diminishing quantity.

The full benefit would be felt in ten years' time, when the incompetent would have dropped out of practice, experience shown the advantages, and prejudice disappeared.

Statutory Qualification and Registration for all professions and trades is a question of the near future ; it goes hand in hand with Technical Education, and as facilities to obtain technical instruction increase, whether at the University, College or School, so will the question of Qualification and Registration be raised.

The "Bogey" Cry of the R.I.B.A.

From the great centre of architectural examinations, the R.I.B.A., which has preached and practised the principle for a quarter of a century, comes the bogey cry, as to the possibility of examining students.

To quote their memorandum :—" Architecture claims to be one of the liberal arts, akin to the art of the painter, the sculptor, and the musician ; and if they do not seek protection from the charlatans in their respective arts, why should we ? "

But architecture, the mother art, is a composite profession, including not only the artistic, but the constructive, hygienic, and scientific training, and so should not be compared with the sister arts, which do not need the same special training in addition to the artistic spirit.

Any architect, even if an art architect, must be the better for an architectural training.

The Meaning of Registration.

In the present it means that every man practising architecture shall be duly enrolled in an Official Register under an Act of Parliament, and be duly responsible for his professional actions, and that no one be allowed to practise until he is duly enrolled.

In the future it means that no one will be allowed to practise architecture until he is duly qualified, and has been found to be so by undergoing a qualifying examination.

It is a matter of surprise that this obvious benefit should not have been secured to the profession long ago, seeing the advantage a qualifying examination has been to the learned professions of Law and Medicine.

What has been done in England.

The R.I.B.A. has devoted a considerable amount of time and trouble in trying to draft a Registration Bill which will meet with the general approval, as strongly conflicting views would make it difficult to obtain Parliamentary sanction to any proposed measure.

The proposals made are on the Associate System, but not strong enough on the Registration side, tending rather to Statutory Qualification only.

In addition to Fellows and Associates in the R.I.B.A., a new class of membership is proposed for those who cannot be admitted to the former classes, to be called Licentiates.

This is a provision for vested rights, as after, say, five years membership of the Royal College would be compulsory.

The Society of Architects has always been in favour of Statutory Registration, and most persistent and energetic in its attempts to secure the passage of a Bill, which has been introduced from time to time, but owing to pressure of public business, unfortunately has not been reached. In December, 1902, the Architects' Registration Bill Committee was amalgamated with the Council of The Society of Architects, with the President of the Society as Chairman.

The Bill drafted by The Society of Architects is on the " Board System," though the Board (or Council, as it is termed), which is divided into branch Councils for England and Wales, Scotland and Ireland, respectively, is appointed by the " Associations." Here we have Statutory Qualification and Registration combined.

England has been divided on the question of the system of Statutory Qualification and Registration to be introduced rather than the necessity, as it has been shown that a large majority are in favour.

Ireland has obtained the first instalment of Registration in Great Britain in a clause in the Irish Labourers Bill, to the effect that " every person whom a district council proposed to employ as architect, engineer, surveyor, or clerk of works, should satisfy the Local Government Board that he has sufficient knowledge and experience for such employment."

To quote the Secretary of the Royal Institute of Architects of Ireland, " We are practically unanimous in favour of Registration ; I cannot call to mind any architect who is against it."

In Scotland resolutions have been unanimously carried cordially approving and advocating the principle of Statutory Examination and Registration.

In France we have Statutory Qualification only, *i.e.*, without Registration; though there is much to be said in its favour, it does not go far enough.

The United States of America favours Statutory Qualification and Registration on the Board System. The Acts that have been passed in the three States, which are similar, commend themselves to me more than any others I have read, as they are both strong and workable.

Illinois passed an Act in 1897, " To provide for the licensing of architects and regulating the practice of architecture as a profession."

It is from the Province of Quebec (Canada) Association of Architects that I take the term " Associate System," as they take the lead in this direction. You will see Canada tends to Statutory Qualification and Registration on the Associate System.

Alberta has followed Quebec, and no doubt similar associations will be formed in other Canadian provinces.

In Natal, South Africa, any person can, by paying £5 per annum, obtain a Government license to practise as an architect.

It is not too much to say that there are men in practice as architects, not only in Durban but in most parts of South Africa, who have not had the training and do not possess the qualifications to enable them to undertake the designing of better class-buildings now being erected.

These remarks show that South Africa has Registration only, and that the need of Statutory Qualification is keenly felt and strongly advocated for.

In the Australian States, the feeling generally is that we should have Statutory Qualification and Registration on the Board System: although at the same time it is proposed that the majority of the members of the Board should be nominated by the Institutes.

In Victoria a Bill was prepared in 1890-2 by a representative committee, submitted to the Legislative Council, and talked out. The only fault of the Bill was that is was fifteen or twenty years too early. We recognise that now the time is more favourable, and the R.V.I.A. is about to reconsider the submission of Registration to Parliament. We think it wise to drop the word "Registration," and to adopt the term "Statutory Qualification." The word registration suggests to the public that we want to make architecture a close profession, whilst "Statutory Qualification" seems to suggest that only qualified men will be allowed to practise. To us, both terms mean the same thing, but apparently the "man in the street" does not think so.

In South Australia, as long ago as 1887, a bill was drafted to regulate the qualifications of practitioners in architecture, but owing to the hostile reception it met with from some of the leading politicians, who considered the Institute had acted from selfish motives, it was lost.

This you will see is Statutory Qualification and Registration combined under the Board System.

The Western Australian Institute of Architects has earnestly moved in the direction of obtaining Statutory Qualification and Registration for architects.

In 1897 a bill was drafted and introduced by a private member, set down for reading, but the Government being unfavourable, and in view of a contemporary movement to form an Australian Federation of Architects, it was withdrawn.

"The cause of failure here is traceable partly to public indifference and partly to the presence among those practising as architects, of a large number of unqualified men who, arriving in this State, find no restriction, and write themselves as architects. These men take no interest in the advancement of the profession, and imagine that the Institute is self-seeking."

"Tasmanian architects were unanimously of opinion that all practitioners should have some Statutory Qualification."

New South Wales has talked about the subject for a quarter of a century, but I can find nothing done.

I am sure that with the present strength of the Institute we are in a position to obtain our end long before Great Britain.

By closing the door in this way to the incompetent, and controlling the professional practice, we would raise the standard of the profession, and obtain the confidence of the public.

When we are all bonded together under an Act of Parliament, with one common interest, and that the profession, we shall find that bond to be a bond of union and of friendship.

Carpenters' Hall Lectures, 1908.

On the following Thursdays at 8 p.m.

MAR.	LECTURER.	SUBJECT.	CHAIRMAN.
5th	BANISTER F. FLETCHER, F.R.I.B.A., F.S.I.	"Georgian Architecture."	The LORD BALCARRES, M.P., F.S.A.
12th	JAMES POWELL,	"The History of Painted Glass and its Process."	The Rt. Honble. The EARL of PLYMOUTH, C.B.
19th	Prof. W. SOMERVILLE, M.A., D.Sc.	"Trees—New and Old,"	The Rt. Honble. VISCOUNT MIDLETON.

The lectures will be illustrated by lantern photographs. Admission free by ticket, which may be obtained of the Society, or at Carpenters' Hall.

The Architectural Scholarship (1908).

Value £10 per annum, tenable for Three Years.

There will be a competitive examination in the form of an Essay on Architectural History, and a Freehand Drawing, held on *May 7th*, 1908, *entries for which must be made before May 1st.* No entrance fee is required. Maximum age limit 19.

Entry form and full particulars may be obtained of the Secretary.

The Travelling Studentship.

Value £25 and a Silver Medal.

Subject for the Design Competition, 1908.

A Public Library on the open access system, to be erected on a level corner site open on two sides. The estimate of cost is not to exceed £5,000.

Drawings must reach the Secretary not later than May 1st, 1908. Copies of the conditions, site plan and other details may be obtained on application to the Secretary.

Church Lighting by Electricity.

A WRITER in *The Illuminating Engineer*, discussing this matter from the standpoint of an electrician, points out that churches present problems in illumination which are not encountered in any other kind of building, and if the subject is not approached in a scientific spirit the result will be most unsatisfactory to all concerned.

The whole arrangement should be planned out from the supply point in the building before any work is done and the general scheme of lighting control gone into, bearing in mind the fact that at certain times the number of lights required to be turned on will vary. The switches should therefore be accessible to whoever requires extra light for special purposes at the moment, thus certain lights must be under the control of the organist and others handy for the preacher, so that the congregation is not disturbed.

Apart from the general arrangement and run of wires, the lighting itself requires considerable thought. It is most important that the lighting should be out of the direct line of sight of the audience. The effect aimed at is not brilliancy, but a quiet, unobtrusive, subdued, and yet sufficient degree of illumination. The fittings are not designed to add to the appearance of the church, for church architecture is of a type that gains nothing from such comparatively small affairs as electric light fittings and shades. The effect is gained by bold sweeping curves, and springing columns ; and the light should be contrived so as to bring out the beauties of wood and stone that otherwise are hidden from sight and knowledge ; not so fixed as to attract the eye of the beholder. Architects have been known to fix the most vulgar of all vulgar *art nouveau* electroliers wherever the eyes of the audience could rest upon them. Brassy garter-shaped fittings, with bird-cage chains and yellow flexibles curled in and out, with rose-tinted shades hanging in the centre of grand old Transition arches in a fine old Transition church, where every stone spoke of the majesty of the past, and the abominable shrieking brassy vandalism of the electric light fittings simply told of the pitiful lack of taste of the present.

The fittings must be plain and unobtrusive, with the lights as far out of direct sight as possible, consistent with proper effect and economy of burning. The old plan of lighting churches with immense electroliers containing fourteen or eighteen-light fittings, in egg-shaped cut (or imitation cut) glass shades, must be considered to have had its day. It was the plan of the man who wanted to fix as few points as possible, and get as much for them as he could ; and it was carried out by the man who considered his work firstly from the standpoint of profit, and secondly from the point of view of speedy and easy working ; the effect being quite a minor

consideration. The church authorities were generally inwardly grumbling if outwardly uncomplaining at the expensive nature of electric lighting compared with the results obtained. The electric light would be said to be trying to the eyes, too expensive, difficult to see by, and everything that was bad. And all for the want of thought on the part of some one or other in the first place !

With the old method mentioned the effect was that the light would be unavoidable except by those who were seated right in the front of the church. To those behind it would be impossible to look at the preacher except through a sort of halo of glass shades messed up with spidery fittings.

Such a method is therefore to be condemned. And but little if any better is the old-fashioned system of altering the existing gas fittings. It will almost always be found that these consist of upright brass standards, with seven or more branching arms carrying flat fish-tail burners. The gas-lighting was not particularly trying to the eyes, for two reasons. First, the standards were rarely arranged in the direct line of sight of more than a very few of the congregation, and, secondly, the light was never sufficiently powerful to do more than make the darkness visible. The method followed by many—usually because it is a simple and inexpensive plan—is to convert these standards. To that end, the branches are unscrewed and turned downwards with a half turn from the top bend, half-inch holders are fixed, and lamps inserted. The result is that the lights are some six or eight inches lower than previously, they are much more powerful, and they are conspicuous. The electric light is once more condemned. Though it is admitted that the lighting is improved, yet it is considered trying for the eyes.

If this plan is followed, but the lights left upright instead of being turned down, the effect is perhaps not so trying, but the lighting is distinctly worse. The bulk of the light is directed to the roof, the principal portion of the light being, therefore, either lost, or else, in cases where the church is fitted with a gallery, used to blind the eyes of the unfortunate worshippers sitting therein.

Speaking of galleries, these can be usually effectively illuminated by lights placed well back. Brackets on the stonework between the windows are usually adequate for this effect, but if insufficient, they can be supplemented by fittings of the Linolite type placed either on the pillars where convenient, or else hung down from the roof by light iron chains, the reflector being placed at such an angle as to prevent any of the people sitting behind seeing any of the actual lamps.

Another favourite method of church lighting is from the pillars, surrounding them with an array of lights, fixed on short wrought-iron arms pointing downwards at an angle of about forty-five degrees. In places this may be effective but again the question of eyesight comes into consideration. In any case, the lamps should be frosted, unless the contractor is bold enough and strong enough to insist upon the use of a cup-shaped metal reflector shade that will entirely cover the lamp from

sight, allowing only the space immediately beneath the lamp to be illuminated. In such a case the trouble is that the lights will have to be arranged with some degree of irregularity to get a good lighting result; but the use of such shades entirely prevents the bad effects mentioned.

The lights used must be powerful, unless they are in plain view, in which case they must be toned down as much as possible, and should consist of frosted lamps. But if the source of light can be concealed or totally screened from the eye, let the lights used be as powerful as possible. It is a fact that very excellent results have been obtained by the use of flame arcs; but without actually recommending these, it is evident that if they could be fixed so as to offend neither the visual nor the artistic senses, they would certainly be a most effective means of illumination; more particularly those of the pure white, daylight-effect type.

But it is evident that the more powerful the lights, the fewer the points required, and for that reason metallic filament, rather than carbon filament lamps should be used. The trouble is that at the moment few of these lamps can be used other than in a vertical direction, and most fittings suitable for churches are designed for lamps to burn at an angle. But this difficulty can be surmounted with a little trouble and attention, if suitable reflectors are contrived for their use.

The ideal form of church lighting would be that in which the artificial illumination would be practically equal to that obtained during the average day; that would be free from alterations of glare and gloom, and that would be entirely hidden from the view of any one whose attention is fixed upon the preacher or their books—the kind of lighting that would make a man observe to an acquaintance that such and such a church is beautifully lighted, and then be unable to explain how it was illuminated because he had not noticed.

It may be said that such a scheme might be admirable in theory, but well-nigh impracticable on the ground of expense alone. That is not so. The powerful nature of the lights would tend to cut down the number of points to some slight degree, and with lights fitted with metal shades and reflectors, placed in embrasures and niches, the expense of costly fittings would not be incurred. A considerable portion of the lighting would be effected by what might be described as a kind of batten light, such as is used in theatres, and fed by a length of twin lead-covered cable. It is possible that all the risk and trouble of roof work would be saved, and it is certain that the effect of the work would be well worth the extra expense, if any.

With regard to the actual wiring, there is no method so suitable in every way as lead-covered work. Whether it be the lead-covered paper insulated system, or that in which vulcanised rubber wires are brought together and lead-covered, is practically immaterial. The writer prefers the former, if only on account of the circular section, most of the small conductors of the other system being oval, and as

such looking more like electric light leads ; especially where bent out of the straight to turn at right angles.

These circular twin lead-covered wires can be run with ease practically anywhere in a church, and if the cable—which is comparatively inexpensive—is lavishly used, all points being brought back to the distributing centre, with no attempt at looping out or jointing unless such operations can be carried out without trouble, and in some hidden, or at any rate inconspicuous position, a very neat effect can be gained with a minimum of trouble.

A good deal depends on the structure of the building. As the lead-covered wire is to be unnoticeable, and we are insisting upon the fact that there must be nothing visible to offend the eye, either as regards fittings, lights, or wiring, and yet it may be necessary to run it along some coarse string, or up the side of some pillar ; it is obvious that it must be covered in some way by something that will harmonise with and blend into the building so as to be indistinguishable.

Stone and woodwork, fortunately for the artist-electrician, are the usual features of church work, so that he has not to consider a multitude of tones and shades. There are seldom any colour effects to be studied ; and if there are, they are not insurmountable. The problem is how to run the wiring economically, taking all things into consideration, and yet to harmonise it with the building. For carrying out this four things only are necessary : common sense, paint, sand, and single-groove casing of similar wood to that used in the building. As the wire is wound off the drums it should be painted with a good quality paint of the same colour as the stone work ; and as it is painted, fine sand or powdered bath brick should be sprinkled upon it and the whole left to dry. It will then, if run in straight lines, or curves to match the position, be practically invisible, especially after dust has toned down the newness of the work. Where it runs along the woodwork it should be covered with the casing, washed with water stain to match in tone. This is particularly easy with oak, which is the wood principally used in churches. Where other wood is used it is not quite so easy, and the wires must be run as much out of sight as possible. But with due consideration as to position of lights, on the general lines laid down in this article, and with sound common-sense as to running of wires, it is not only possible, but comparatively easy, to realise the ideal lighting wherein the lighting effect is good, the lights practically invisible, and the wiring as inconspicuous as in the best class of concealed work.

The Society of Architects Lodge, No. 3244.

The next Meeting will be held at the Liverpool Street Hotel, E.C., on Wednesday, March 11th, 1908.

Reading Room.

The Reading Room on the second floor is accessible during office hours for the use of Members and Students (9.30 a.m. to 6 p.m.), Saturdays 1 p.m. All the principal professional papers are available for reference, including a number of American, Continental and Colonial publications.

Members may reserve the room for business appointments on application to the Secretary. Writing materials are provided and there is a telephone in the clerks office on the ground floor.

Cape Town Castle.

Discovery of Quarry from which the stone came.

In 1665 stone for the erection of the Castle was quarried. We read, says Mr. A. G. Howard (Member), of the Public Works Department, Cape Town, that three hundred men were employed on this work. During the erection, recently, of the new buildings for the *South African News*, an old quarry was discovered; and when the trenches were sunk for the new Law Courts foundations, the extension of this quarry was encountered. The surface of the ground had been raised more than six feet since the abandonment of this quarry, and Mr. Howard is of opinion that here is the place where the three hundred men procured the stone for the building of the Castle.

The Legal Liability of the Architect.

In his recent paper, read before The Society of Architects, Mr. Montefiore Brice laid stress upon the fact that if an architect furnishes drawings for a building, the cost of which is not to exceed a certain limit, and it is afterwards found that the building cannot be executed for that sum, he cannot recover his fees.

This is borne out by a recent decision, where a building owner was sued by an architect for fees for preparing plans of a building which was not carried out, owing to the cost exceeding the stipulated amount. The judge held that as the plans were not prepared according to instructions they were useless and the work could not be done, and, as there was a fixed sum for the contract, he dismissed the case.

The R.I.B.A. Secretaryship.

Mr. G. Ian MacAlister, B.A., Oxon., has been appointed to succeed Mr. W. J. Locke as Secretary of the R.I.B.A. Mr. MacAlister, who was an Exhibitioner in Modern History of Merton College, Oxford, graduated with honours in Classics and Literæ Humaniores in 1901: After leaving Oxford he served for two years as secretary and aide-de-camp on the staff of Major-General the Earl of Dundonald during his command of the Canadian Forces. Since his return to England he has been engaged in literary and journalistic work.

Eighth International Congress of Architects, Vienna.

This Congress will be held during the week, 18th to 24th May, 1908, and will be organized on similar lines to the Congress held in London two years ago, and five out of the six subjects for discussion are identical with those then brought forward. Registration is one of them.

The Society of Architects will be represented by the President, Mr. R. Frank Vallance, F.R.I.B.A., and the Hon. Secretary, Mr. Ellis Marsland.

The Secretary of the Congress is Herr F. F. Von Krauss, of Eschenbachgasse 9, Vienna.

A contribution of 25 kronen (a krone being equal approximately to a franc) qualifies for membership of the Congress, or 15 kronen for ladies.

Donations and Gifts to the Library.

The Hon. Librarian acknowledges with many thanks the receipt of the following donations and gifts to the Library.

A. E. Algar	(Member)	..	..	..	£5	0 0
Tom Johnson	,,	..	..	..	2	2 0
J. E. Kingham	,,	..	..	..	1	1 0
Ingalton Sanders	,,	..	..	..	1	1 0
R. Arrowsmith	,,	..	..	..	0	10 6

BOOKS PRESENTED :—

TITLE.		PRESENTED BY.
Towers and Spires of England (*Green*)	..	WELLS, GARDNER, DARTON & Co.

BOOKS PURCHASED :—

Works of the Brothers Adam (portfolio of drawings).
London Laws and By-laws.

Library Catalogue.

A new Catalogue has been compiled, and is now ready. Copies may be obtained of the Secretary. Price, sixpence each.

An Elastic Paint.

We have received a sample of Messrs. Chancellor's manufacture, "Velure," most of the advantages of which are summed up in the word "elastic." It has many others, as a glance at the colour sheet and handbook will testify. One argument in its favour is the increasing number of architects who specify it in preference to enamels and varnishes.

Meetings and other Fixtures of the Society.
Session 1907-8.

Subject to such alterations and additions as may be announced from time to time in "The Journal" or by circular.

1908.

Mar. 11th. The Society of Architects Lodge Meeting, Liverpool Street Hotel, E.C.

„ 12th. Committees, Council and Ordinary Meeting. Paper by the Rev. Percy Dearmer, M.A., on "The arrangement of Churches and their Fittings."

„ 26th. Interim Committees.

„ 28th. Visit to Cement Works of Associated Portland Cement Manufacturers, Ltd.

„ 31st. Entries for examination close.

April 9th. Committees, Council, and Ordinary Meeting. Paper by Mr. Alfred Hands, on "Protection against Lightning."

„ 14th to 16th. Examinations for Membership, London and Manchester.

„ 17th to 20th. Offices closed. Good Friday and Easter Monday.

„ 30th. Interim Committees.

May 1st. Last day for delivery of Travelling Studentship Drawings, and for Entries for Scholarship Examination.

„ 7th. Scholarship Examination.

„ 13th. The Society of Architects Lodge Meeting, Liverpool Street Hotel, E.C.

„ 18th to 24th. International Congress of Architects, Vienna. Delegates from the Society: Mr. R. Frank Vallance, F.R.I.B.A., President, and Mr. Ellis Marsland, Hon. Secretary.

„ 21st. Committees, Council and Ordinary Meeting. Subject of paper to be announced.

„ 22nd. Annual Dinner, Trocadero Restaurant.

June 8th. Whit Monday. Offices closed.

„ 12th to 15th. Summer Meeting at Mansfield.

July 13th to 18th. Royal Sanitary Institute Congress, Cardiff. Delegates from the Society: Messrs. James and Morgan, FF.R.I.B.A.

Mainly about Members.

Messrs. LLEWELLYN & Pawley, architects and surveyors, of Sevenoaks and Farnborough, have dissolved partnership.

A workmen's library has been built at Aberbargoed, at a cost of about £3,000, from the designs of Messrs. JAMES & MORGAN, FF.R.I.B.A., of Cardiff.

The Devonport Mercantile Association has elected MR. E. M. LEEST, J.P. as its Chairman, and one of the new schemes foreshadowed is a pavilion for the park.

Extensive alterations are being carried out at the London Road Girl's School, Southend, for the Southend Education Committee, from plans prepared by MESSRS. CABUCHE & HAYWARD, architects, of Westcliff.

The Chelmsford Education Committee have decided on the erection of a new school on a site in Hill Road, Springfield. The school is to provide accommodation for 750 children, and Mr. W. H. PERTWEE has been engaged as architect for the proposed work.

The *Engineering News*, in its "Biography of the week," February 14th, 1908, published a very excellent likeness and biography of PROFESSOR HENRY ADAMS, who fills among many other important offices, that of President of the Institute of Sanitary Engineers.

Forty-nine designs were submitted in the competition for a new pavilion for the Old Shrewsbury Bowling Club. The committee have selected the one submitted under the *nom de plume* "Sabrina," which proved to be by Messrs. DICKENS-LEWIS and Haynes, architects, of Shrewsbury.

A parish-room, known as the Turner Memorial Hall, has been opened at Mansfield. The building, which was designed by MR. F. P. COOK, architect, Mansfield, consists of a large hall to seat 300 people, as well as two smaller rooms, entrance-halls, sculleries, and outbuildings.

The Wesleyan Methodists of Great Houghton have erected a new church and Sunday-school, at an estimated cost of £1,400. The building is of brick, with Wombwell stone facings, and was built from plans prepared by Messrs. Garside & PENNINGTON, architects, of Pontefract and Castleford.

Under the title of "Many Memories of a Mighty Marshland Minster," a lecture on Ely Cathedral was recently given at the Blenheim Club, St. James' Square, S.W., by MR. E. W. HARVEY PIPER. The lecture was illustrated by lantern views by various amateur photographers including MR. ELLIS MARSLAND, and MR. GEORGE TROTMAN.

A new north aisle and vestry have been added to the parish church of Drayton. The scheme as originally drawn contemplated also the building of a chancel aisle, but that has still to be achieved. The estimated expenditure was about £1,500. The architects of the work were Messrs. LACEY & Upcher, of Norwich.

A lecture, illustrated by numerous lantern slides, was recently given by MR. GEORGE TROTMAN on "Waltham Abbey Church," at All Saints' Schoolroom, Grosvenor Park, Camberwell. The alleged Saxon character of the fabric was discussed at length, the author being reluctantly compelled to come to the conclusion that no pre-Norman work could be identified in the building. The restorations by the late William Burges, A.R.A., in the early "sixties" were severely animadverted upon.

The Portsmouth Board of Guardians are having the infirmary under their control enlarged. The extension comprises two blocks, one for males and the other for females, both of which will provide accommodation for eighty-four patients, with the necessary kitchens and offices. At the southern end of the institution, entirely separate, there is to be added a maternity ward providing for twelve patients, and there will also be additional rooms in which electrical treatment will be given. The architects are Messrs. RAKE & COGSWELL.

MR. D. IVOR LEWIS, a member of the South African Board of Examiners, has recently resigned the position of Chief Architect in the Town Engineers' Department of the Johannesburg Municipality, in order to proceed to South Wales, where he intends to practice. Mr. Lewis has had during his tenure of office, extending to nearly six years, the supervision of work aggregating a million sterling, including bridges, power stations, subways, fire station, abattoirs, and many other buildings. His wide experience should be of great value in his new sphere.

The Mission of the Holy Spirit in Spring Garden Lane, Newcastle, was recently opened. The new building contains a mission-room in the basement, about 80 ft. long by 40 ft. wide. At the rear is a choir gallery, and at the other end a small chancel, with a plain oak altar, and a stone pulpit at the left. Above the mission-hall is the clergy house. There are also classrooms. On the second floor is the dining-room, with kitchen, scullery, and a spare bedroom. On the third floor are the housekeeper's room, bedrooms, and bathroom accommodation. The buildings to the first floor are faced with ashlar, and above there is red-pressed brick, with stone dressings. The architects were Messrs. BOYD & Groves, of Newcastle.

Ordinary Meeting.

The Fifth Ordinary Meeting of The Society of Architects, for the Session, 1907-8, will be held at Staple Inn Buildings (South), Holborn, W.C., on Thursday, March 12th, 1908, at 8 p.m.

Agenda :—

1. The President to take the chair.
2. Minutes of the last Ordinary Meeting.
3. Nominations for Membership.
4. Ballot for the following Candidates.

For Membership :—

Bradford. Percy Richard,	Carlton Chambers, 12, Regent Street, W.
Butters. B. Harlow,	Albion Chambers, King Street, Nottingham.
Fry. Peter George,	Woodford, All Saints Rd., Weston-super-Mare.
Hider. Ernest James Wedlock,	8, Cliffords Inn, E.C.
Jane. William,	Lee Wood, Weston-super-Mare.
Kingwell. Albert Edward,	103-4, Cheapside, E.C.
Lawson. George Joseph,	Granville Chambers, Bournemouth.
Overton. William Henry,	22, Ship Street, Brighton.
Ranson. Walter,	West Street, Hazlemere, Surrey.
Rings. Frederick,	21, Railway Approach, London Bridge, S.E.
Taylor. John Henry,	2, The Broadway, Finchley, N.
Webb. William Arthur, a.r.i.b.a.,	23, Powis Square, W.C.
Wiblin. Frederick A.,	92, Old Town Street, Plymouth.
Wilde. Sydney John,	Boulevarde Chambers, Weston-super-Mare.

For Studentship :—

Allfree. Percy Reginald Henry,	61, Middleton Square, E.C.
Boag. Robert Steven,	"Kebroyd," Lennoxvale, Belfast.
Catling. Frank Richard,	27, Loftus Road, Shepherds Bush, W.
Dakin. Ernest Alfred,	32, Havelock Road, Norwich.
Dear. Frank F.,	210, Lambeth Road, S.E.
English. Charles Arthur,	Ash Lea House, South Hylton, Sunderland.
Ford. Charles,	Bishop Land, Emmer Green, Reading.
Garnham. Ernest Walter,	33, Bickerton Road, Highgate, N.
Knyvett. John Seymour,	51, Hagley Road, Edgbaston.
Maple. Charles Albert Victor,	Gurney House, Stratford, E.
Phayre. Harold,	Priory Villa, Shrewsbury.
Rees. Alfred Edward,	159a, Bedford Hill, Balham, S.W.
Smith. Sidney Richard,	145, High Street, Streatham, S.W.
Stafford. John Edward,	c/o Mrs. Hailes, Station Rd., Bill Quay-on-Tyne.
Thorpe. Alexander,	"Glenbrook," West Malvern.
Trumper. Thomas Victor,	Ivy House, South Broom, Devizes.
White. Francis Hartley,	1, Aston Street, Iffley Road, Oxford.
Whelan. Joseph,	11, Fairhill, Cork.

5. Paper on "The Arrangement of Churches and their Fittings."

By The Rev. Percy Dearmer, M.A.

The paper will be illustrated by lantern slides. Ladies are specially invited.

THE
Journal
OF
The Society of Architects
FOUNDED 1884. INCORPORATED 1893.

Including Transactions and Architectural Notes.

No. 6. Vol. I.] APRIL, 1908. [New Series.

The Society is not, as a body, responsible for the opinions expressed by individual authors and speakers.

Architects' Benevolent Society.

Some Suggestions for its Development.

The Annual Report of the Benevolent Society clearly shows that after an existence of over sixty years it is so far out of touch with the profession that less than ten per cent. of the number of practicing architects of the United Kingdom contribute to its support. Surely, this is a state of affairs which requires more drastic treatment than the somewhat feeble suggestions put forward at the recent annual meeting.

There are more than five thousand practicing architects in the United Kingdom, the majority of whom it may be assumed employ at least one assistant, so there should be say ten thousand architects who are in a position to contribute to some extent to this deserving fund, and who should collectively be easily able to raise say £5000 per annum, or about ten times as much as is at present subscribed.

The question is how are they to be reached and retained. We suggest that in the first place every Architectural Society from the R.I.B.A. to the last formed provincial body, should be made the active agents of the Fund.

It should be made known that representation on the governing body can be obtained by a minimum donation or subscription from Corporate bodies, and the Council should not rest until every Society is so represented. Each Society in its turn should put the matter before its members with a view to securing this end. There are many men who would not care to send up a donation of a few shillings to Headquarters, who would wiliingly give a small sum to a local Society in order to secure for it those voting powers which the individual could not exercise except at a greater expenditure than he is able at the moment to make.

The Fund might also be made a prominent object at every meeting, whether formal or social, the Charity Box should be in evidence in the meeting rooms, and if possible, the members' offices, and at every Annual Dinner an appeal should be made with a view to a special donation to be handed to the central body at a Festival Dinner to be held in London.

Then again one hears of large gatherings at Soirees, where a contribution of say one shilling per head would realize perhaps £25 to £30.

Another advantage of working through the Societies would be the opportunity of calling attention of new members to the Fund.

As regards the Benevolent Society, at present it is content with an occasional appeal from the President, and advertisements in the various journals, all excellent means of securing attention, but which should be supplemented by a regular and systematic course of circularising and following up, together with some annual function, preferably a dinner, at which to focus the results of the year and afford an opportunity for making the Fund still more widely known.

At present, there is little incentive to give, nor are the claims of the Society pressed home as they might be. Members of the profession are not ungenerous, but unless the matter is kept constantly before them, it is forgotten.

All this leads up to the undoubted fact that if the Benevolent Society is to be in a position to properly cope with the claims made upon it, it must be prepared to spend a great deal more than is done at present, on organisation work.

A few hundred pounds or so wisely administered by someone thoroughly acquainted with the requirements of the Fund would undoubtedly show results which would justify still further developments, and would eventually lead to the Society being in a position to do real and lasting good. As long however as the Society is content to expend so small an amount on getting and keeping in touch with architects, leaving the burden of development on the shoulders of its honorary officers, who must necessarily be far too busy to do more than keep it going; so long will it drag on a humdrum existence and remain a source of anxiety to those responsible for carrying on the work.

The burden should be borne not by the few but by the many, and given a strong man at the head of affairs, with a reasonably free hand, this desirable state of affairs could be brought about, and a reproach removed from the profession.

The Society of Architects has accepted the invitation of the Royal Institute of Public Health to appoint a delegate to represent it at the Buxton Congress, on July 18th next, and has appointed Mr. W. R. Bryden, F.R.I.B.A. (Member), a past member of the Council, as its representative.

Eighth International Congress of Architects.

The provisional programme of the arrangements for the forthcoming Congress of Architects, which will be held at Vienna from the 18th to 24th May next, have been issued to members through the R.I.B.A.

It is hoped that for the honour of the architectural profession in this country the list of British Members may be as large as possible. On the occasion of the Congress held in London in 1906, the response made to the British invitation by our foreign colleagues was of a very generous character. The value of these Congresses in advancing the art of architecture, and in effectively dealing with the material interest of architects in all countries, is well established, and the importance of strengthening friendly international relations for these objects cannot be too strongly urged upon the members of the profession.

Travelling Arrangements and Facilities.

Arrangements are being made for special terms to be granted to members of the Congress by the railway companies and hotel proprietors, particulars of which will be furnished to members as soon as possible. In the meantime it may be convenient to know that the probable cost of the return fare from London to Vienna will be about £8 15*s*. first class, *viâ* Calais and Bâle. The return tickets will be valid for 45 days, and may be used for alternative return routes, of which further particulars will be issued.

For those wishing to travel together a personally conducted party will be made up which will leave London on Friday the 15th May, and arrive in Vienna on Sunday the 17th.

The subscription to the Congress is fixed at 25 Kronen (= £1 1*s*.), and for ladies at 15 Kronen (= 12*s*. 6*d*.).

Advice to Applicants.

The forms of application which have been issued by the Vienna Committee are somewhat complicated, and the financial arrangements suggested by them may easily be misunderstood. The British Section have, therefore, decided to advise those who propose to accept the invitation to Vienna to acknowledge it in the following manner :—

(*a*) Disregard the yellow form altogether.

(*b*) Fill in name and address on the postcard.

(*c*) Fill in names and addresses on the *White Application Form*, but leave the "Amount of Subscription" blank, and do not send any money or cheque with the Application Form.

(*d*) Send to the Secretary R.I.B.A., names and addresses of those going to the Congress, together with a cheque or postal order payable to him for the amount of the subscriptions.

The British section will be responsible for forwarding the subscriptions to Vienna, and making all further arrangements with the Executive of the Congress.

If, later, members find it impossible to be present, the amount of their contribution will be returned.

Proceedings.

THE Fifth Ordinary Meeting of The Society of Architects for the Session 1907-8 was held at Staple Inn Buildings, Holborn, W.C., on Thursday, March 12th, 1908, at 8 p.m.

MR. G. A. T. MIDDLETON, A.R.I.B.A. (Vice-President), having taken the chair, the minutes of the previous meeting were taken as read, and were confirmed and signed.

The following nominations were then announced :—

For Honorary Membership :—

STONE. SIR J. BENJAMIN, M.P.,	The Grange, Erdington.

For Membership :—

BOTHAMS. ALFRED CHAMPNEY,	32, Chipper Lane, Salisbury.
BREWER. FRANK WILMIN,	11, The Green, Richmond, Surrey.
CHADWICK. ARTHUR SMETHURST,	78, King Street, Manchester.
MURGATROYD. ARTHUR JAMES,	23, Strutt Street, Manchester.
OMAN. WILLIAM CAMPBELL, A.R.I.B.A.,	P. W. D., Singapore.
TAYLOR. ALFRED JOHN,	18, New Bond Street, Bath.

For Studentship :—

BERROW. THOMAS JOSEPH,	43, Talbot Street, Cardiff.
CLARK. FRANK TOWNSON,	18, Craven Street, Newbury, Berks.
HARLAND. NORMAN GREGORY,	43, Elmcroft Street, Clapton, N.E.
HUGHES. THOMAS HAROLD,	Abbey House, Cobridge, Stoke-on-Trent.
JUMPER. FREDERICK,	High Street, Epping.
O'HANLON. VINCENT HENRY EDWARD	116, Rathgar Road, Rathgar, Dublin.
PETERS, KERSHAW,	159, Boundaries Road, Balham, S.W.
PICTON. CLEMENT JOHN,	10, Norton Way, Letchworth.
SOMERVILLE. ALEXANDER,	69, Warrender Park Road, Edinburgh.
WALTON. WILLIAM BILLINGTON,	27, Birley Street, Blackpool.
WELCH. HERBERT ARTHUR,	35, South Grove, Highgate, N.
WESTBYE. JOHANNES THORWALDSON,	14, Great Ormond Street, W.C.

The ballot was then taken and the following candidates were declared to be duly elected :—

As Members :—

BRADFORD. PERCY RICHARD,	Carlton Chambers, 12, Regent Street, W.
BUTTERS. B. HARLOW,	Albion Chambers, King Street, Nottingham.
FRY. PETER GEORGE,	Woodford, All Saints Rd., Weston-super-Mare.
HIDER. ERNEST JAMES WEDLOCK,	8, Cliffords Inn, E.C.
JANE. WILLIAM,	Lee Wood, Weston-super-Mare.
KINGWELL. ALBERT EDWARD,	103-4, Cheapside, E.C.
LAWSON. GEORGE JOSEPH,	Granville Chambers, Bournemouth.
OVERTON. WILLIAM HENRY,	22, Ship Street, Brighton.
RANSON. WALTER	West Street, Hazlemere, Surrey.
RINGS. FREDERICK,	21, Railway Approach, London Bridge, S.E.
TAYLOR. JOHN HENRY,	2, The Broadway, Finchley, N.
WEBB. WILLIAM ARTHUR, A.R.I.B.A.,	23, Powis Square, W.C.
WIBLIN. FREDERICK A.,	92, Old Town Street, Plymouth.
WILDE. SYDNEY JOHN,	Boulevarde Chambers, Weston-super-Mare.

As Students :—

ALLFREE. PERCY REGINALD HENRY,	61, Middleton Square, E.C.
BOAG. ROBERT STEVEN,	"Kebroyd," Lennoxvale, Belfast.
CATLING. FRANK RICHARD,	27, Loftus Road, Shepherds Bush, W.
DAKIN. ERNEST ALFRED,	32, Havelock Road, Norwich.

Dear, Frank F.,	210, Lambeth Road, S.E.
English, Charles Arthur,	Ash Lea House, South Hylton, Sunderland.
Ford, Charles,	Bishop Land, Emmer Green, Reading.
Garnham, Ernest Walter,	33, Bickerton Road, Highgate, N.
Knyvett, John Seymour,	51, Hagley Road, Edgbaston.
Maple, Charles Albert Victor,	Gurney House, Stratford, E.
Phayre, Harold,	Priory Villa, Shrewsbury.
Rees, Alfred Edward,	159A, Bedford Hill, Balham, S.W.
Smith, Sidney Richard,	145, High Street Streatham, S.W.
Stafford, John Edward,	c/o Mrs. Hailes, Station Rd., Bill Quay-on-Tyne.
Thorpe, Alexander,	"Glenbrook," West Malvern.
Trumper, Thomas Victor,	Ivy House, South Broom, Devizes.
Whelan, Joseph,	11, Fairhill, Cork.
White, Francis Hartley,	1, Aston Street, Iffley Road, Oxford.

The Rev. Percy Dearmer, M.A., then gave a lecture on "The Arrangement of Churches and their Fittings," illustrated by lantern slides.

Mr. G. A. T. Middleton, A.R.I.B.A. (Chairman), in inviting discussion upon the lecture, said in all his experience he had rarely heard one so full of suggestions and points open to discussion.

Mr. Ellis Marsland (Hon. Sec.) said his first duty was to propose a hearty vote of thanks to Mr. Dearmer for his lecture. He had no idea he had been listening for so long, the lecture had been so full of interest. They were very much indebted to the lecturer for showing them where the shoe pinched, though architects were not always responsible for the fittings of a church. Matters of that kind were very often taken out of their hands, however much they might wish to retain them, and architects were not altogether to blame for some of the difficulties which had been pointed out. Some of them were of course due, as had been said, to the ignorance of tradition, and others the architect having nothing to do with the fittings. Sometimes it was a question of cost. It was very difficult for an architect to insist on all that he thought necessary in the church. There were usually several societies to deal with, such as the Church Building Societies and others who had something to do with providing the money; these had to be considered, otherwise the money was not forthcoming. He was afraid they would sometimes have great difficulty in providing all the things suggested although very necessary no doubt from the clergyman's point of view. For instance, three vestries had been advocated, but in practice it was often found very difficult to get even one. Sometimes the church was built piecemeal. Starting with the chancel, they had to do without a vestry and very often had to put on a temporary nave; the other portions of the building having to wait for years before they were added. He quite agreed, however, that a Sacristy, Church-wardens' and Choir vestry were all necessary to the proper conduct and carrying out of the service of the church. If they had all these things they would very likely get nearer to the old Monastic arrangements and their churches would be something approaching the monastic buildings of old in which were all sorts of necessary arrangements for carrying on

the service. With regard to the Organ he very much wanted to know what was the right position for it. In the church in which he was in the habit of worshipping it had been moved three times and it was contemplated to replace it in its original position in the West end. The difficulty about the West end for the organ was that they must also have the Choir there. He did not know whether the lecturer meant to move the Choir as well as the Organ. Many matters might be questions of tradition, but also at the same time matters of opinion. An architect had to consult the wishes of his client and it was possible for one clergyman to be succeeded by another of different views and who objected to the arrangements which the preceding clergyman had adopted.

Mr. Thos. Falconer had much pleasure in seconding the proposed vote of thanks, and said he wished all clergymen knew their requirements like Mr. Dearmer. With regard to Organs and Choirs, he would like to see them in the West end of the Church. The Chancel should be kept clear for the Servers, and a mass of white surplices in so conspicuous a position often spoilt the colour scheme.

Mr. A. H. Salisbury (Harpenden) thought the subject of the lecture was a most interesting one. From an architectural point of view they had lost a good deal since the Reformation, and by actions and reactions, both architects and clergy were reduced to a state of ignorance as to what was the historic system in their old church, and certainly he thought Mr. Dearmer had taught them something. The question of the seating of the Choir and the placing of the Organ was rather an interesting one. In St. Albans Cathedral the Organ had been recently removed from the top of the Rood Screen and placed in two very beautiful cases on either side over the screen, which did not project very much from the wall, so restoring the original vista up to the high Altar. He thought Organs were as a rule a nuisance, but if they could be reduced in size it might solve the difficulty.

Mr. G. A. T. Middleton, A.R.I.B.A. (Chairman) said that some of the suggestions made by Mr. Dearmer were quite new to him. It was, for instance, unusual to meet a clergyman who really wished to make his church thoroughly comfortable by introducing such novelties as a clock in the pulpit, and a safe in his vestry, or who would think of providing a tolerably secure poor box. Most clergymen were the greatest enemies to architects when the latter wished to introduce anything not in accordance with precedent. They would not have noiseless doors, nor would they allow a swing door, nor doors that opened outwards. Architects knew very well that all public buildings should have their doors to open outwards, and now it was insisted upon even in regard to churches, in some cases. That evening they had a clergyman asking them to make everything perfect from a modern point of view, and he was exceedingly glad that there were a few who were willing to assist architects in that way. He could assure him it was not

the architects' fault that churches were old-fashioned in their equipment, this was outside the control of the architect as a rule, it being almost invariably the building committee and the clergymen who were opponents to the introduction of novelties, however good. He hardly agreed with the lecturer with regard to whitewashing. He had seen whitewashed churches innumerable, particularly in Holland and Belgium, and he did not like them. His own inclination was certainly towards a church which showed its stone interior. The whitewashed surface wanted enriching in some way and the great Gothic builders knew how to do it. Westminster Abbey had most beautiful specimens of diaper work over the stone and what more beautiful decoration could there be, and yet it was done in such a way as not to kill the stonework. The only argument which had been put forward in favour of whitewashing was that by its use the beauty of their stained glass was enhanced. There was a great deal to be said in favour of making churches larger than the immediate necessity required, for it often happened before long that the cry was for more accommodation. In many cases there were a great number of persons to provide churches for but the means were lacking to build on a grand scale. Under those conditions what could they do but crowd them up with seats. In other districts where the accommodation exceeded the congregation he agreed with Mr. Dearmer that it would be far better to remove some of the seating and allow ample space and passage ways. What Mr. Dearmer had said about an empty church inducing individual prayer was borne out on the Continent, where at all times of the day one might go in, pray for a few minutes and go out. One could take a chair anywhere and be unobserved. Also, there was a great deal to be said for his demand for accessory buildings closely attached and allied to the church, in which a children's service could take place at the same time as the general service. It was worthy of development, but he did not think it was a matter which could be pressed by architects but rather that the public should be brought to be interested. Architects would be only too willing to assist in the making of such groups of buildings as their fore-fathers did in times gone by. With regard to West-end galleries he thought there was a great opportunity for architects, but the great drawback to these was the want of supervision over the choir boys, and he hoped they would not be revived. They were, however, of extreme value from a musical point of view; in Antwerp Cathedral the West-end organ was a wonderful accompaniment to an East-end choir. Preferably they should have two organs. At Rouen, for instance, they had a Choir Organ and a West-end Organ. A West-end Organ certainly led a congregation better than an East-end one.

Mr. Dearmer, in returning thanks, said he took a pride in talking over matters in that way. The future was bright although the past was strewn with wreckage. With regard to white-washing of course their walls were white just the same if they

had them decorated with diaper work, but what he was particularly against was colour decoration and he would like to see all their churches either white-washed or with diaper work as had been suggested. With red brick interiors it was almost impossible to work in any colour scheme. The white-wash used in Holland, he thought, was more of a blue-wash or sort of mixture. Somehow or other the art of frescoing at the present day was a lost art, amply borne out by the endeavours to restore old work, notably at St. Cross, near Winchester, which was terrible.

The question raised in connection with the Organ being placed in the West end did not necessarily involve the Choir sitting there too. By modern systems of electrical connection the Choir could still be placed in the Chancel if necessary. The main thing, from an architect's point of view, was to clear the Organ from some of the places in which it was found.

Lastly, in reference to the Altar and its ornaments, since the 17th and 18th centuries they been going down hill. In the history of the church from its earliest days the Altar had been extremely simple, as they had seen by the slides displayed, and all architectural sense of proportion found its dignity, not by useless ornamentation, but in higher and better ways.

The Architectura and Topographical Society.

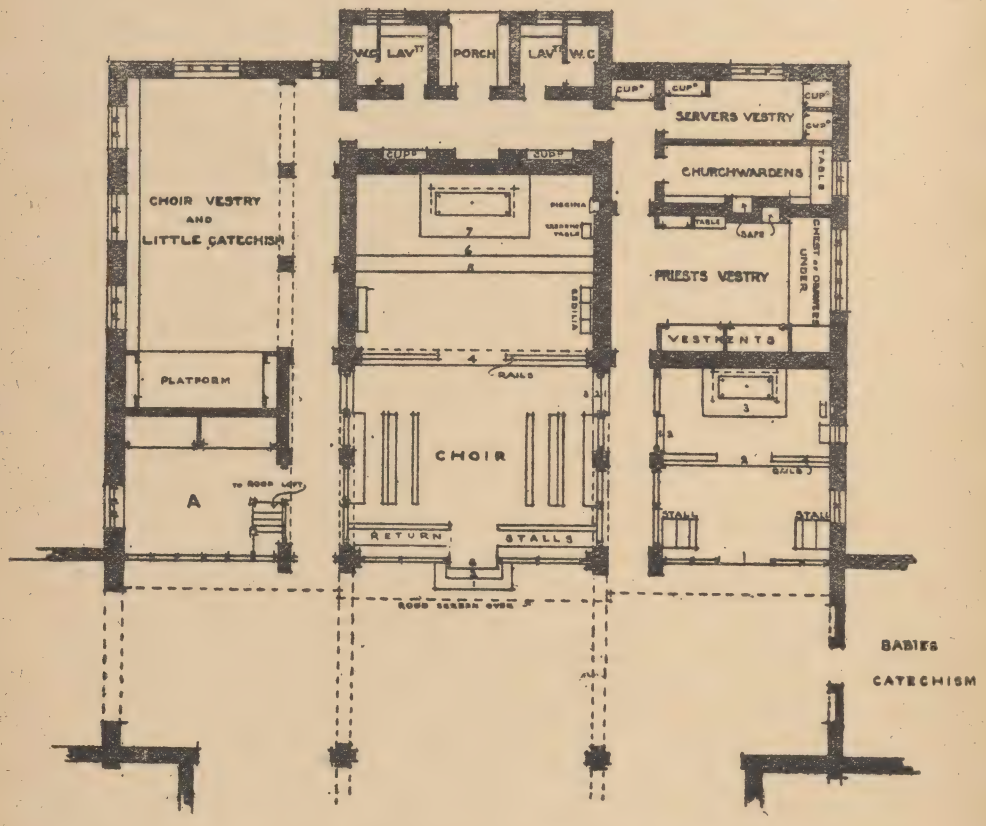
This Society has been founded to make and publish a survey of objects of architectural and archæological interest in the British Islands. It is proposed to collect, and keep for reference in the offices of the Society, measured drawings, sketches and photographs, together with an outline map showing the positions of places described or illustrated. Those who have the control of ancient buildings are requested to stipulate that copies of any measured drawings or photographs and a record of any alterations or restorations shall be deposited with the Society. The publications of the Society will include a quarterly journal to be called *The Architectural and Topographical Record*; a card index, under subject headings, of the four parts will be issued at the end of each year, the journal being in such a form that it may readily be arranged under geographical headings; references will be given, as footnotes, to previous publications, and it is hoped to include a bibliography of each parish. The annual subscription will be half a guinea, but members may compound for life on payment of seven guineas. Members who contribute information will receive a rebate on the contribution being accepted and printed. Twenty pages of printed matter will be accepted in lieu of the subscription. The office of the Society is at 33, Old Queen Street, Westminster.

The Arrangement of Churches and their Fittings.

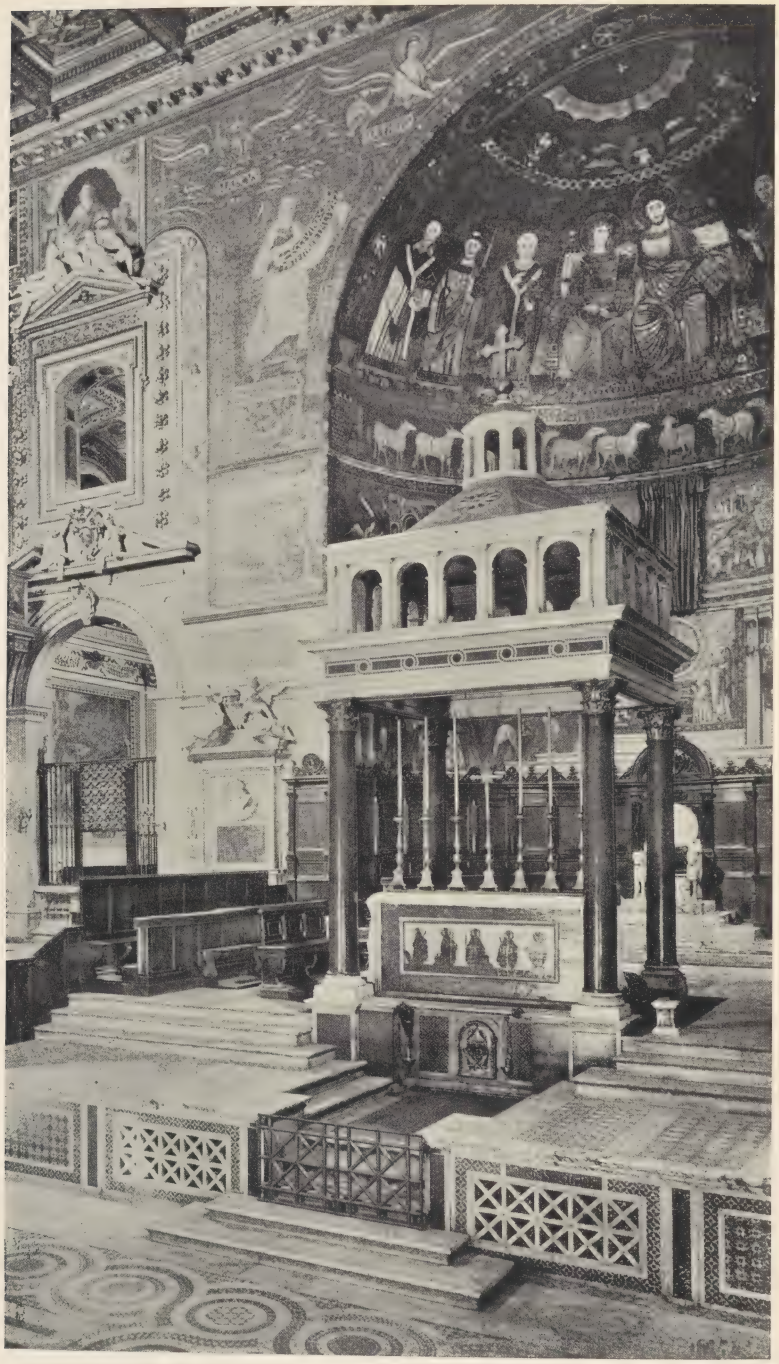
ON March 12th a lecture was given by the Rev. Percy Dearmer, M.A., on the arrangement and furniture of Churches. Mr. Dearmer began with a general description of the various fittings in the interior of a Church, more especially the Font and the Pulpit, matters which are dealt with fully in the pages of his book on the arrangement of the Parish Church and its services, *The Parson's Handbook*, the sixth edition of which is published by Henry Frowde. The plan is given to illustrate some of the questions raised by the lecturer. In modern churches, the lecturer pointed out, provision ought to be made for modern needs, and it is useless merely to copy the plans of buildings belonging to another age. On the other hand work done without ecclesiological knowledge, and devoid of the Christian tradition, is equally unsuitable. In the plan referred to, a chancel is shown surrounded by the accessory buildings such as are needed at the present day. The Choir itself in this instance has short stalls, which are returned in accordance with the right church custom; for larger choirs the stalls could be longer, but in the average Parish Church it is better for choirmen to be picked, and consequently few in number: these stalls would hold five men on either side, and three in the returns on each side—sixteen in all, including the clergy. The Communion Rail is on one step, which is an important practical matter, since two steps make the work of the clergy very exhausting. Eastward of the Communion Rail is a space unbroken by any step, and here again architects often offend by putting a step in the middle of this Pavement, and thus reducing its practical usefulness. The Altar stands on the three steps which are all that should be used (indeed in many old examples one or two steps are all that is found); the lowest step is that for the Epistoler or Sub-deacon, the next is the step for the Gospeller or Deacon, the top step is generally called the Foot-pace, and is for the celebrating priest: all these steps are often made inconvenient because they are not broad enough; they should be not less than twenty-five inches. The Altar stands away from the east wall (which makes it more easy to arrange or clean its furniture), and is enshrined by the dorsal and riddels, which hang from rods between four pillars. On the south side is the Credence, the Piscina, and the Sedilia, or seats for the officiating ministers; on the north side are seats for the servers. The two standard candlesticks occupy their proper positions on the Pavement and below the Altar steps.

South of the choir is the Chapel, containing an Altar and its foot-pace with no other step, except one for the Communion Rail, and another at the entrance to the Chapel. On either side are stalls for two clergy, which are needed, since Chapels are generally used for week-day morning and evening prayer.

One feature of the arrangement shown in this plan is that an ambulatory runs right round the choir. By this means the Chapel, the four Vestries, the Choir, and the Nave are all equally accessible from every part; communicants can easily return from the Altar without obstructing the way of those who are approaching it; and moreover (which is a great practical convenience) communication is easy between the north and south of the Choir, and the Vestries, without having to cross in sight of the congregation.



There are four Vestries, which we will take in order as they appear on the plan. (1) the Sacristy, or Priest's Vestry: ample cupboard accommodation is necessary here as in the other vestries, since nearly every Church is rendered inconvenient by the absence of proper serving accommodation. In the Sacristry is a safe for the Altar-plate, a large cupboard for vestments, a large press of sufficient size for three people to be able to use it simultaneously, and a table for the vessels to be put out before service. Either on a shelf or else in the press additional cupboards will be needed for cruets, altar-linen, etc., or for books. (2) the Churchwardens' Vestry contains



S. MARIA IN TRASTEVERE.
(*The six candlesticks are a modern addition*).

a second safe (much needed, and seldom found) for keeping money and old registers, a table with drawers, and shelves on the wall. (3) the Servers' Vestry contains cupboards for their surplices, etc.

Next is the Porch, flanked by two lavatories, one for men and one for boys. This eastern Porch, a new feature of great use under present conditions, contains seats, so that those who have business in the Vestries, especially choir boys, can wait in shelter in bad weather; there will, of course, be a bell in this porch. The passage is fitted with cupboards for storing cleaning utensils.

The fourth Vestry is the most important, inasmuch as it is used for many purposes. Primarily it is a Choir Vestry. It is made large—40 ft. by 20, with an additional space through the pillars provided by the ambulatory, and it might well be larger still. Space is very desirable even for the use of the choir; but it is more especially needed because a room is thus provided for Vestry and Parish meetings, and also for the use of the younger children on Sundays, "The little Catechism" as this is called by many nowadays: these smaller children must have their services simultaneously with their elder brothers and sisters, but they cannot be taught effectually in the same building, consequently a great modern need is to have a large room adjoining the Church, where a second Children Service can be held. A really well equipped modern Church in a large parish would need yet a third building for the very small children and babies—in fact a Sunday Kindergarten: it is suggested in this plan that the south transept should be walled off for this purpose. It may also be pointed out that in the 20th century, as the instinct for self-government developes, the use of the large Choir Vestry for meetings will be increasingly required. There is a platform at one end of the Choir Vestry for meetings and for services: for its primary purpose there are cupboards round the walls (or racks) for boys' and men's surplices. Properly arranged cupboards are also put for the music.

West of this Vestry is the room marked "A." In some churches this might be required as a second chapel; in many it would be a chamber under the organ; in all it would provide convenient room for further cupboards, for banners, hangings, and Altar frontals. The screen runs across the church covering this chamber or chapel, the choir, and the south chapel; and a screen might also be taken out one or two bays to enlarge the accommodation of the chapel.

Mr. Dearmer concluded his lecture by lantern slides illustrating his traditional arrangement of the Christian Altar. He has lent us four blocks to make the subject clear. That of St. Maria in Trastevere, at Rome, illustrates the altar of the Primitive Church enshrined within the four pillars of the "Ciborium." From the latter, in primitive times, hung four curtains which completely hid the Altar during the more solemn part of the service. This screening of the Altar has been maintained in the Eastern Church by the solid wall of the Iconostasis. In the West, however,

it was gradually removed, though not altogether. Another illustration shows a rich Flemish Altar of the 15th century. Here the front curtain is of course gone; the back curtain is replaced by the reredos of beaten silver; the side curtains, or riddels as they are called, still exist, these hang from rods, and should always be parallel with the ends of the Altar—never spread out.

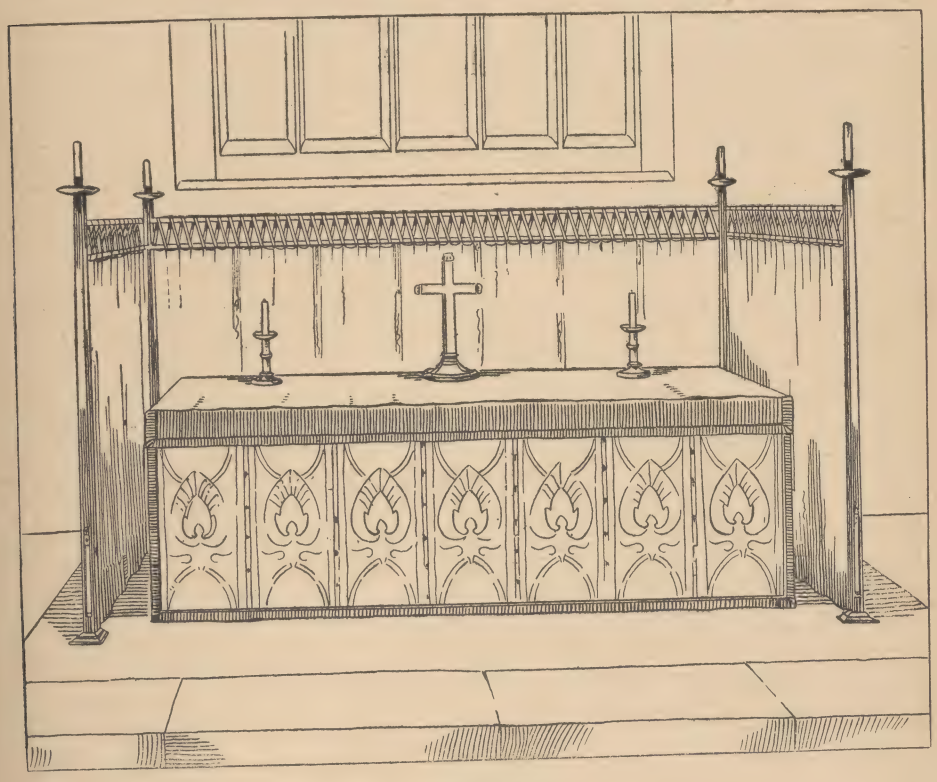
"MAKING THE BEST OF IT."

(*An old Parish Church with the levels raised too high.*)

The above illustration Mr. Dearmer called "Making the best of it," because as he pointed out, the levels of the Church have been raised, as has been the case in most of our old Gothic Churches, to their great detriment; and consequently the dorsal appears above the window sill; owing to circumstances the Altar also had to be shortened in this instance. Nevertheless a very beautiful effect is obtained; and here again the absence of the horrible conventions of the

A FIFTEENTH CENTURY ALTAR.

Church decorators will be noticed; and the satisfactory effect of the dorsal with its two riddels, the three remaining curtains of the primitive Christian Altar. The following illustration shows a very simple Altar giving the best proportions—a longer Altar than in the previous examples; most English Gothic Churches have their East windows low, so as to allow only three feet for the dorsal, this being the usual



A SIMPLE ALTAR.

Mediæval arrangement. A study of examples shows how much dignity is acquired in this way. Mr. Dearmer threw on the screen the frontispiece of *The Parson's Handbook*, which gives a more elaborate and complete representation of an Altar thus arranged in the traditional manner, to which the Prayer Book refers in the Rubric: "And the Chancels shall remain as they have done in times past." It will be noticed that the Cross and the candles stand directly on the Altar, without any shelf or gradine, and also that there are no flower vases, which may indeed be tolerated, but which are hardly necessary, when the furniture of the Altar itself is rich, as it should be, and well proportioned.

Planning as a Chief Factor of Success in Architectural Competitions.

Recent events have led a writer in *The Inland Architect and News Record* to compare the old and new methods of assessing competitions which often resulted in earlier days in the selection being based upon a well executed perspective. This was due to the fact that the judges were frequently drawn from any other profession than that of an architect and were consequently quite out of touch with such questions as adaptability or cost.

Since the advent of the professional adviser, now usually demanded, much of the haphazard procedure of former days has disappeared. The new conditions have emphasized the importance of the plan in competition awards, and the possible influence of the beautiful picturing of the design is minimized or entirely eliminated. Architects now find that too much care cannot be given to the study of the practical requirements of the plan, that it may best meet the objects for which the building is intended. In a somewhat recent competition for a great municipal building, one of the competitors spent several weeks with the heads of the various departments to learn wherein the planning of the old building could be improved upon, and what better provision could be made for economy and efficiency of administration. Two other designs were pronounced preferable as to the exterior appearance, but the building was awarded to the competitor who had so carefully studied and worked out the plan. Another similar example is found in the competition lately decided for the new county building for London. No competition in recent years in England has been of greater importance. The competitors numbered many architects of the highest professional reputation, yet the award was won by a young man of 29 with no previous work of importance to his record. He, however, was fortunately situated to obtain accurate information as to the requirements of the service for which the building is to be used; he worked out the most adequate plan and won. His exterior while direct, well balanced and of architectural interest, is a disappointment to those who think the building should be an imposing structure, expressive of the commanding position of London, the metropolis of the world.

The Society of Architects Lodge, No. 3244.

A Meeting of the Lodge was held at the Liverpool Street Hotel, E.C., on Wednesday, March 11th, 1908, and after the transaction of Masonic business, the members dined together. Mr. Albert E. Pridmore, W.M., was supported by a number of members and visitors, including representatives of Grand Lodge.

Suggestions as to how the Architect & the Engineer can Combine.

Mr. Percy J. Waldram, F.S.I., in a paper recently read before the Junior Institution of Engineers, said that some ten years ago the suggestion was made that engineers should not hesitate to seek the collaboration of architects whenever architectural skill was necessary with their work. Architects have the responsible control of a very large field of engineering work, and a still larger field of potential work now left untouched, and it is the imperative duty of Institutions, on both sides, having a proportion of younger members, to do all in their power to extend early and fruitful connexions.

Not much progress has been made since that date, and continental and American practice is to-day far ahead of British in the facility with which each profession absorbs all that is best in the other. The author does not, however, mean to suggest that the engineering and architectural professions should amalgamate, but simply that each should seek the assistance and co-operation of the other. There are many highly specialized branches of work in which the special knowledge of engineers would be very valuable; for instance, in such matters as water supply, heating, artificial lighting, ventilation, and reinforced concrete construction, &c. In this connexion the architect is fully aware that his knowledge and experience is limited to ordinary expedients, and when special appliances are necessary would be willing to seek the expert in these matters,

One difficulty which faces any attempt at co-operation is the question of where the engineer's fees are to come from, and the author considers that it is partially this difficulty which has led the architect not unfrequently to rely on the technical advice of the manufacturing engineer alone. Yet the latter is frequently adverse to subordinating his designs and methods to the intentions of the architect, and grows accustomed to giving him whatever he has generally been accustomed to produce in ordinary practice, without due regard to æsthetic considerations. Thus arrives the unfortunate condition of affairs that even an experienced and broad-minded architect, who appreciates to the full the constant triumphs of the engineer, yet prefers to have as little to do with him as possible in his work. In this he is unduly prejudiced, but has a considerable amount of reason on his side.

What architects really need is the work of engineers who, whilst skilful, experienced, and well abreast of the times, are neither biassed nor in a position tending to influence their work and their judgment in the commercial interests of their own pockets. Architects want men who are ready to undertake small work at correspondingly small fees, and who will be willing to frame and vary their designs to comply with the requirements of their buildings. There is plenty of work for

such men if the architect only knew where to find them, and the need of their services is increasing every day.

Engineers are equally in need of the assistance of the architect, though the average manufacturing engineer, unfortunately, seldom appreciates the work of the architect to the same extent that the latter appreciates his. He is apt to consider the architect as devoted to old traditions and customs, not very practical in his methods, and, in short, the last man to whom an engineer would go for practical assistance. This view is really very wrong and quite unjust to any architect worthy of the name, for in many cases the special knowledge of the architect would not only lead to the æsthetic appearance of the building being more satisfactory, but also to a considerable reduction of costs.

In short: The kind of architects whom engineers need are experienced, practical, up-to-date men possessed of a discriminating knowledge of materials and processes, ready to undertake small work, and who are, above all things, able to express their ideas of beauty (at least in utilitarian buildings) through the best adaptation of means to an end, rather than by the application of extraneous ornamentation.

Among the present difficulties in the way of co-operation the author mentions:

(*a*) The difficulty of finding the right man at the right fee;
(*b*) Professional prejudice;
(*c*) Custom.

The first is regarded by the author as most serious, and, in order to secure the right man, he advocates the collaboration of societies devoted to the engineering and architectural professions. As a means of providing the fees demanded by the specialist engineer, he mentions the possibility of setting aside a proportion of the cost of such items as reinforced concrete, electric light, special ventilation, &c., which are generally included in the contract, and on which a quantity surveyor generally, but not invariably, receives a certain percentage.

By drawing on funds of this nature, small as they are, the cost of employing the specialist engineer might frequently be met without encroaching on the well-earned fees of the architect.

Twenty-Fourth Annual Dinner.

The Annual Dinner of The Society of Architects will be held at the Trocadero Restaurant, Piccadilly Circus, W., on Friday, May 22nd, 1908. The chair will be occupied by the President (Mr. R. Frank Vallance, F.R.I.B.A.). Further particulars will be announced in due course.

The Proposed Cambridge Diploma for Architects.

Professor Ridgway favours the principle of Registration.

Professor Ridgway, of Cambridge, in taking part in the discussion in the Senate on the Report of the Diploma in Architecture Syndicate, said it had been stated that they were going to lower the standard. They said—No; and in their report they were very precise in expressing their idea that they should have a very high standard in all that they did for architecture. The architects had done very little for themselves. They had, at last, drawn up some scheme of their own, but it was not of a very high order, and some of them did not like the idea of their own diploma at all. Architecture, as a profession, was in chaos. Here was the statement made by Mr. Blomfield and his colleagues: "Architecture is a fine art. You can no more teach men architecture than you can teach them painting or sculpture." Architecture was not one of the fine arts—purely a luxury, like painting and sculpture. Humanity had managed to live without painting or sculpture, but humanity had not been able to live without houses. It was the duty of an institution like their University to lay down the highest standard within its power, not merely for the men who were going to build great houses, palaces for Kings, or cathedrals, but also for the men who would build the ordinary houses which artisans and labourers had to live in. They wanted to rectify the present condition of things under which any man could come there, go to King's Parade, hire a room in a house and put out a brass plate declaring that he was an architect and surveyor. Such a man could practice without hindrance. The poor deluded public went to him and had to suffer for it. He himself (Prof. Ridgway) might put over his rooms in Caius College that he was an architect and take in the public, and there were worse men than he doing it! It was a state of things that should not be. But the great architects in London would do nothing to remedy that, and said that they did not want a diploma, and that each man must establish his own position. It was all very well for those great men to assume that position, but what they wanted was something to prevent the public from being gulled, and, what was more, they wanted something that should raise the level of architecture in the land. They wanted to ensure that the architect had been given a sound training, that he had been so taught as to be able to build a house that would not tumble down, chimneys that would not smoke, and so on, and that he should not be a real fraud to the unfortunate person who employed him to build a house. The whole science of architecture was in a bad way, not only with regard to the artistic side, but on the professional side, in providing ordinary houses for the public. If Cambridge would only take the matter into her own hands, if she would not listen to what those architects said outside, but would make up her mind to undertake the

education of architects for herself, and by herself, with a high ideal of the standard she would exact in the various tests she would impose, they would be on their way to the Diploma, and the Cambridge Diploma would not simply be a great benefit to herself and her students, but in a very short time it would raise the whole level of architecture, and, in consequence, raise the level of the highest form of architecture in the kingdom.

Constructional Ironwork and its Protection from Rust.

Mr. Frederick Baumann, architect, writing in *The Inland Architect*, emphasizes the fact that rust is a nuisance. Innumerable ways of protecting iron have been advanced, and all are more or less efficient. Iron is never free from rust, and there are no ready means for cleaning it. Rust is apt to grow under any coating and scale it off. This condition is furthered by the ever prevailing expansion and contraction, which causes innumerable slight crevasses in the coating. The remedy known as "Bauer-Barffing"—coating the surface with a film of Fe_3O_4, through exposure to a heat of 650°,—is expensive, and, besides, it has proved to be so difficult to bring about that good results were not always accomplished. Painting, and again painting, has been the principal remedy—where iron is exposed.

Where constructive iron parts are to be shielded by fireproof envelopes the required permanent protection of them appears to be far more assured. It becomes possible to bring all surfaces in positive contact with the protecting materials. To effectually bring this about the following suggestions are made :—

(1) The construction of all parts be such that all iron surfaces can readily be protected. This means that, above all, the usual hollow spaces in them be abolished for the plain reason that their enclosures are never air-tight, so that renewed air will constantly be in contact with them and produce rust.

(2) Rust be removed from surfaces as far as it is practicable, and all be covered with protecting lime-water. For a long time it has been known that this, as well as other liquids of basic reaction, has the property of shielding iron against rust.

(3) Upon this be put a heavy coat of lime or cement wash.

(4) Then all faces be plastered and lined to a certain thickness with some proper material.

The column is now ready for receiving pipes and may be finished to suit. Girders to be correspondingly enveloped. In case they are double the intervening spaces should be filled. No serious difficulty appears to be in the way of thoroughly accomplishing the object in view.

A few years ago a few columns in a large building about ten years old had been dismantled and were found to be thickly covered with a threatening rust. The architect in the case ever since constructs columns as above indicated.

The Society of Architects' Visit to the Swanscombe Works of the Associated Portland Cement Manufacturers (1900) Ltd.

Of the various visits which the Society has paid to the works of manufacturers, the one on March 28th was one of the most interesting and valuable.

The visitors, on arriving at Northfleet, were met by officials of the Company and were most hospitably entertained to luncheon by the Chairman (Mr. Fred A. White), and Directors, subsequently proceeding to the works by car.

Here every possible facility was afforded them for seeing the process of manufacture, and the following notes will enable those who were not so fortunate as to be of the party to realize to some extent the growth and development of the industry.

Portland cement is a British invention, and Northfleet may fairly be called the cradle of the industry, for it was there that the earliest works were erected by the younger Aspdin, whose father had invented the product in the year 1828. These works, owned for a number of years by Messrs. Robins & Co., Ltd., passed, with many others, into the hands of their present owners in the year 1900. In close proximity to them are the works formerly owned by Messrs. John Bazley White and Bros., Ltd., and by Messrs. Knight, Bevan and Sturge, who were the first to distribute the new product in foreign countries, and whose trade marks have acquired a world-wide reputation. About the same time, other works were started by Messrs. Hilton & Anderson, at Faversham (Kent), and gradually the production of Portland cement in the valleys of the Thames and Medway has extended until it now reaches the substantial total of over 2,000,000 tons per annum, and the major portion of this output takes place at works now belonging to the Associated Portland Cement Manufacturers (1900), Limited, including those above mentioned.

The rotary kiln, which is now revolutionising the trade, was, like Portland cement itself, an English invention, and patents for it were taken out by the late Frederick Ransome and others nearly twenty years ago. The furnaces were heated by producer gas, and no attempt was made to pump the liquid "slurry" (*i.e.* the mixed raw materials) into the rotating furnace, as is now done: on the contrary, it was first dried and coarsely pulverised. This supposed necessity for first drying and crushing the "slurry" prevented the success of the rotary principle in this country, but the different raw materials and the "dry" system of manufacture used by cement makers in Pennsylvania, U.S.A., led American engineers to take up Ransome's idea and make it successful. The length and diameter of the kilns were largely increased; crude petroleum or finely powdered coal was used as fuel, and the rotary kiln is to-day the standard system throughout the North American

Continent. Many important principles and improvements in connection with the kilns were patented by Messrs. Hurry & Seaman, and the sole right of use of their patents in the United Kingdom was acquired by the Associated Portland Cement Manufacturers (1900) Limited, in 1900. A battery of 16 kilns was being erected at Messrs. J. Bazley White and Brothers' Swanscombe Works at the time of their purchase. This plant, producing about 3,300 tons weekly, proved so successful that, in 1904, it was decided to largely extend it and to erect other batteries of rotary kilns at the Knight, Bevan & Sturge Works at Northfleet, and at the Arlesey Works in Bedfordshire. The Company's output of Portland cement by the rotary kiln method alone at their Swanscombe and Northfleet Works will shortly exceed 600,000 tons per annum.

The rotary kiln system is a continuous one and avoids the labour attendant on the loading and unloading of the old-fashioned intermittent kiln, whilst the calcination is more perfect and more completely under control. Calcination, however, is but one part of the manufacture, and the following brief description of the whole of the processes may be of interest :—

The first matter to which the visitors' attention was called was the quarrying of the chalk on the extensive properties of the Company adjacent to the works, and the importation of the alluvial clay from the river Medway, where the Company and their predecessors have purchased large supplies.

The amalgamation of the chalk and clay in fixed and definite proportions with about 43% of water is accomplished in batteries of what are termed "Washmills"; the mixture thus obtained, known as "slurry," after passing through the preliminary washmills is put through the finishing or screening mill, where it passes through very finely perforated screens and leaves the mills in such a fine state that from 95 to 97 per cent, will pass through a sieve having 32,400 holes per square inch. The chalk used consists of almost pure carbonate of lime and the clay of silicates of alumina and fine quartz sand, the ratio of total silica to alumina being about 4 to 1.

In order to secure the greatest possible uniformity in the chemical composition of the slurry it passes from the finishing mills into large circular mixing and storage tanks (each holding sufficient to make 600 tons of cement) where it is kept continually in motion by mechanical stirrers and finally pumped to the kilns.

Under the modern system of manufacture the whole of the process of amalgamation of the raw materials is under the direct control of the works chemist, who keeps the composition of the mixture constant, and thus ensures a perfectly uniform and sound product.

The visitors then saw the second or chemical section of the manufacture in which the water present naturally in the raw material and that added for mixing

purposes is evaporated, and the dry material thus obtained gradually heated up to a temperature of about 2,800° Fah., at which temperature the whole of the carbonic anhydride in the chalk has been expelled converting the chalk into lime and the latter has entered into chemical combination with the silica and alumina of the clay, forming a double silicate of lime and alumina, which constitutes the principal factor of Portland cement clinker.

It is at the rotary kilns used for the calcining process that the visitors realized more forcibly than at any other part of the works the radical change and advance which has been made in manufacturing methods. The old intermittent kilns necessitated a preliminary drying of the slurry, which was usually accomplished upon a floor or in chambers heated by the waste hot gases from the kiln. The dried slurry (in rough lumps) was then transferred to the kiln, alternate layers of coke and slurry being built up therein until full. It was then lit, and usually burnt off in five or six days. When sufficiently cool the clinker was drawn from the kiln and conveyed in trucks or barrows to the grinding mills. The calcination of the raw material at the Northfleet and Swanscombe works is, however, carried on in rotary kilns of the most up-to-date construction.

The liquid slurry is pumped direct into the upper end of the kiln, the feed being regulated by a special arrangement under the control of the operator in charge of the kiln. In its passage through the kiln by the rotary motion the material is first dried, and then upon reaching the zone of heat at the lower or firing end, it is burned at a temperature of about 2,800° Fah.

The greatest care is, of course, required during the process of calcination to prevent the production of an over-burnt or an under-burnt clinker—the former being conducive to unsound cement and the latter to an over-burnt inert slag. It follows that the method of calcination which permits of the maximum of control during the process should be productive of the finest quality of cement clinker, and it is for this reason that the modern method of continuous burning with rotary kilns has been found to excel all other methods. It was explained to the visitors that the whole of the process of burning in a rotary kiln is under the absolute control of the man in charge, who can regulate the quantity of raw material (slurry) entering the kiln, the amount of fuel (pulverised coal) being injected to maintain the temperature at the lower end, and the speed of rotation of the kiln—which latter governs the output—the calcined clinker finally leaving the kiln in a stream of small pieces uniformly burnt and in which any variation of hardness would be easily detected and immediately rectified. One other important improvement obtained by this method of calcination is the exclusion of practically all the ash from the fuel, which was a source of contamination in the clinker produced in the older kilns.

The heat present in the clinker as it leaves the kilns is extracted by passing the same through the rotary coolers, the finished clinker being delivered cold and ready for the third process of mechanical grinding.

The economical grinding of Portland cement clinker is a matter which has received much attention of late years, and many inventors have produced mills of different types, each of which they fondly hoped would excel all others in its suitability for the purpose. At these works machinery of the most modern type, which has been proved by much practical experience to be the most suitable for grinding Portland cement, is used, viz. :—ball and tube mills. By this system the clinker is reduced to a coarse powder by the ball mill, and this powder is subsequently reduced by the tube mill to the fineness required in the finished cement—this fineness being regulated by the amount of the ball mill product fed into the tube mill.

The ball mill consists of a cylinder, revolving around a horizontal axis, with perforated plates around the circumference. The grinding is effected by means of steel balls which roll on the lower part of the mill and fall from plate to plate as the mill revolves, thus crushing the clinker. The crushed clinker is thrown on to sieves on the periphery of the mill—that which is fine enough passing through and the residue returning automatically to the mill as it revolves for further reduction.

The tube mill is a cylinder 26 feet long and 5 feet in diameter charged with flint pebbles to a point about the centre: as this tube revolves the cement therein is subjected to attrition by the falling stones and, as already stated, is reduced to any required degree of fineness by regulation of the feed supplied.

It will be understood that this is a very costly and important part in the manufacturing process, the cost of grinding being in direct ratio to the fineness—the finer the powder (and therefore the better and more valuable the cement) the greater the cost to the manufacturer. The mills that the visitors saw are engaged in reducing the clinker to such extreme fineness that from 93 to 95 per cent. of the finished cement will pass through a sieve having 32,400 holes per square inch.

It is during the grinding of the cement that the regulation of the setting time is effected. A thoroughly well made and finely ground Portland cement is always when first ground very quick setting. The more thorough the amalgamation of the raw materials, the more perfect the calcination, and the finer the grinding, the greater will be the chemical activity of the cement when mixed with water, and therefore the quicker the set. Until recent years the setting time was regulated by the addition of small percentages of gypsum, but as some engineers have an objection to any admixture of this material the manufacturer was compelled to seek some other means of obtaining the desired result.

The system which the visitors saw in operation is one which has been proved very effective, and which has been in use now for some time. The method was patented by the Associated Portland Cement Company, and consists of subjecting the cement during the final stage of grinding in the tube mill to a moist atmosphere by injecting steam into the mill in whatever quantities may be desired—according to the setting time required—this steam keeping the atmosphere in the enclosed mill saturated with moisture, so that as the mill revolves, carrying up and rolling over the stones and cement therein, every particle of cement is subjected to a continuous and repeated process of superficial hydration, finally leaving the mill in the finished condition, each particle of cement equally treated. This process is one of great simplicity and follows quite natural lines. As is well known, if quick setting cement is allowed to become aerated by exposure to the atmosphere it becomes slower setting in proportion to the period of aeration, and also improves in soundness by the neutralization of any particles of free lime present, through the absorption of water and carbonic anhydride from the atmosphere. This action is, of course, very imperfect when the cement is stored in bulk and can only be in a measure successfully accomplished by continually turning over the cement, and exposing fresh surfaces for aeration, at considerable cost. It is important to note that, by means of the process of hydration during grinding which has just been described, the whole of the cement produced by the Associated Portland Cement manufacturers is ready for immediate use by the consumer before it leaves the factory.

The various properties owned by the Company in the valleys of the Thames and Medway alone cover 4,000 acres. The river frontages with their extensive docks and wharves, are more than nine miles in length, and a fleet of over 200 vessels (steam tugs, lighters and barges) owned by the Company is daily employed for the transport of materials and products to and from the various works. Several of the works have equal facilities for delivery by rail and water. Central foundries and engineering shops have been erected at Northfleet and Frindsbury, near Rochester, to deal promptly with any heavy repairs to machinery or additions to plant which cannot be conveniently carried out at the numerous local workshops. The cask making machinery at the Company's cooperages is capable of turning out upwards of three million barrels a year, chiefly for export, the greater part of the cement for the home trade being supplied in sacks. At the numerous factories every approved method of mixing the raw materials and burning and grinding the cement may be seen in operation, and careful experiments are being continually made to test any new process which may lead to improvement in quality or economy of production.

The largest works on the Thames are situated at Northfleet, Swanscombe and Grays, and on the Medway at Rochester, Halling and Burham.

The Design of Public Libraries.

"Open Access" or "Indicator" Systems.

Mr. H. T. Hare, F.R.I.B.A., in a paper read before the Liverpool Architectural Society, suggested a more economical type of plan than that usually employed. The idea embodied is to abolish all entrance hall, corridors, etc., and to enter direct into the reading room, which it is proposed to treat as a large hall with an open roof, thus giving ample air and floor space. The lending library is arranged as a recessed portion of the same room, and the juvenile and reference libraries open out of it. This gives the most complete and perfect supervision with a minimum of staff, and the only objection is the possible disturbance of readers in the general reading room. A library planned on these lines would be economical, and it would certainly lend itself to an architectural treatment.

The movement in favour of what is known as the "open access" system has been steadily gaining in strength for several years, and there appears to be some prospects of its entirely superseding the "indicator" system eventually. The advantage of the system consists in the readers being able to handle and choose their own books and to ascertain with certainty that they have the book they require by personal examination. From the architect's point of view the problem of the lending library is entirely altered, and in some respects rendered less difficult. With the indicator system a large public space is required, with a very considerable length of counter on which to place the indicators, and it is essential that both the front and the back of these should be well and clearly lighted either by windows or roof lights. This is in many cases extremely difficult to arrange satisfactorily, and is probably the point in which library plans most generally fail. When open access is adopted the problem presents itself in a much less acute form. The counter is placed close to the ingress and exit, and should be in a fairly good light, but it does not require the extreme length needed for indicators, and may take a rectangular or semicircular form. It is, however, desirable that the bookstacks should be so arranged as to be under easy supervision by the staff, enclosed within the counter, and they also require to be much more widely spaced in order to give the public easy access to them—a space of 5 ft. or 6 ft. clear between them being necessary as against about 3 ft. 6 in. with the "indicator" system. The result of this is that any saving in space obtained by the omission of the public space in front of the counter is neutralised.

As to the comparative advantages of the indicator and open-access systems, librarians themselves are at daggers drawn on the subject, and it is practically impossible for an outsider to arrive at a reliable conclusion. Open-access does, however, appear to increase enormously the popularity of a library, and the only

valid argument against it is the loss of large numbers of books by theft. One is rather impelled to the conclusion that it may be purely a question of how well or ill the library may be managed.

The Elimination of the "Loafer."

Perhaps the most cogent argument put forward by the opponents of Free Libraries has been the encouragement they give to the "loafing" element; and one cannot avoid admitting that there has been considerable justification for it.

The only room of a library, however, where this can take place is the newsroom, and it is this room which attracts the most undesirable class of readers. Recognising this, Mr. Duff Brown, the Librarian of Islington, proposed the drastic measure of entirely abolishing the newspaper room, and this has been carried into effect in the new libraries which have recently been erected in that borough. At first sight it appears somewhat of an anomaly that a public library should have no newspapers; but when it is considered how cheap the modern newspaper has become, so cheap that the poorest may buy a copy; and also that the newsroom, when there is one, requires to be very large and most expensively furnished, it may well be asked whether such a large expenditure is justified.

Perhaps the only legitimate need for newspapers in a library is for the use of those seeking employment, and to meet this it is the custom in the Islington libraries to display the advertisements cut from the newspapers, in the entrance hall for a couple of hours on each morning.

The practical result of the establishment of this system at Islington has been that the libraries are the most popular and attract the largest attendance of any in London. The absence of newspapers is not noticed and the loafer has been entirely eliminated.

A Neglected Department.

A very useful adjunct to a library, if it is to be regarded as an educational centre, is a lecture room, in which topics of a literary nature may be discussed, and which may be let for the meetings of literary and scientific societies. This room is usually placed on an upper floor, and should be amply lighted, and approached both from the general staircase of the library, and also by a special staircase and entrance arranged for the purpose, so that the room may, if occasion require, be used entirely independently from the library proper. The room should have provision for the proper placing of a lantern, if possible, in a small ante-room outside the lecture room with a hole through the wall for the lens. This enables the mechanism of the cinematograph to be operated without disturbing the meeting. The end of the room opposite the lantern should have a plain plastered wall painted white to form a field for the pictures.

Top light is the most suitable for this room, in order to allow as much wall space as possible for exhibitions which are occasionally held.

The juvenile room is a department which has been much neglected in English public libraries. This, if properly organised, is one of the most valuable and important of the provisions of a library.

Something of this nature has been established in the Islington libraries. A large room is provided, part of which is partitioned off by a screen and arranged as a small open-access lending library, the rest of the room being filled with reading tables.

This room should be arranged as near as possible to the main entrance, so that the children may pass into their room with as little disturbance to the rest of the building as possible.

The Construction of Library Buildings.

With regard to the construction of library buildings generally, there is really little of a special nature. The building must, of course, be a fire-resisting one, as indeed every public building should be nowadays. As cost is such an important element, the system of construction will require careful consideration, especially in these days when there are so many patent systems thrust upon us, each one claiming to be the best and cheapest ever conceived. There is no system so effective and inexpensive as ordinary steel joists and breeze concrete forming a solid floor, plastered on the under surface, and the upper surface finished with cement to a smooth face, on which is laid linoleum fixed down with mastic composition and wax-polished. This floor will be found to be sufficiently sound-proof when covered with linoleum or cork carpet.

The whole of the joinery should, if possible, be of hard wood, polished, this being the most economical from the point of view of maintenance. The first cost is certainly more than painted work, but the excess is so little that few public bodies will hesitate to incur it.

Heating and Ventilation.

The heating and ventilation are also very important considerations, particularly the latter. Here again cost will preclude the use of any very costly scheme, and one is practically limited to a low-pressure hot water system as being the most economical both in first cost and upkeep. One of the most serious difficulties in the application of the system is the disposition of the radiators or other heating surfaces in the rooms so as to avoid interference with fittings and furniture. In many cases practically the whole of the wall space is occupied by furniture, and as radiators of the ventilating type should be fixed against outside walls if possible, special arrangements are necessary so that the incoming air may have free access to the rooms without impinging upon wooden fittings. In lending libraries and stack rooms the difficulty is still further accentuated by the fact that the walls are covered by bookcases to a height of 8 ft., and it is practically impossible to use radiators at all. In these cases, the best method is to use continuous pipes fixed

in a space about 18 in. high under the bookcases with fresh-air inlets at intervals. The front is covered by movable gratings, and the lowest shelf or bottom of the bookcases protected from heat by some non-conducting material such as "Uralite."

Sufficient inlet ventilation in the reading rooms may be obtained through the radiators, and the extract is best arranged by an electric fan fixed in a chamber or turret at the roof level. If the main shaft leading to the fan is of sufficient height, it will be found in most cases that the system will be generally automatic, and that it will only be necessary to work the fan on special occasions when the building is crowded or the external atmosphere heavy.

Architects' Action for Fees.

In the King's Bench Division on March 13th, the hearing was concluded, before Mr. Justice Lawrance and a special jury, of the case of *Emden, Egan & Co.* v. *the Wilkinson Sword Company, Ltd.*—an action brought by the plaintiffs, a firm of architects carrying on business in Lancaster Place, Strand, to recover from the defendant company, of No. 27, Pall Mall, £900, fees for work and labour done and moneys expended at the defendants' request.

The plaintiffs' case was that they were engaged by the defendants to prepare plans, etc., for buildings on a site at Chelsea, and that it was agreed between the parties that in the event of the scheme being abandoned by the defendants or not carried out under the superintendence of the plaintiffs as architects, the defendants should pay to plaintiffs as remuneration for the work a fee at the rate of 1½ per cent. on the estimated cost of carrying out the scheme, such fee to cover all payments made by the plaintiffs. The estimated cost of the work was the sum of £60,000. Defendants abandoned the scheme, and, omitting to pay the plaintiffs their fees according to the alleged agreement, the present action was brought. Alternatively the plaintiffs claimed £900, or reasonable remuneration, for the work and labour done and moneys expended on the defendants' behalf.

The defendants denied that they had ever agreed with the plaintiffs that, in the event of the scheme being abandoned or not carried out under the superintendence of the plaintiffs, they should pay to the plaintiffs 1½ per cent, on the estimated cost of carrying out the scheme. Defendants admitted that they employed the plaintiffs to do certain work for them and said that they had always been ready and willing to pay the plaintiffs' charges in respect thereof. Defendants admitted that they were liable to pay to the plaintiffs £147 2*s*., which sum they paid to the plaintiffs pursuant to the order of Master Archibald dated September 16th, 1907.

In the result, the jury returned a verdict for the plaintiffs, for £700, and judgment was entered accordingly.

Illumination and the Architect.

The study of illumination, says *The Illuminating Engineer*, is of exceptional interest to the architect, for the decorative schemes planned by him, and the architectural features of his buildings can only be rendered visible to the onlooker by means of adequate illumination. If the illumination is insufficient or incorrectly distributed, the general effects which the architect intended to produce will inevitably be more or less interfered with.

Hence the most perfect system of illumination calls for co-operation between the architect and the lighting expert.

In the majority of cases the greater portion of the work carried out in a building is done under daylight illumination. Yet whether such illumination is satisfactory or no depends chiefly upon the location and extent of the window-space and the method of decoration utilized.

In many cases it is not necessary to secure an equally high illumination in all portions of a room, but even in this case no little skill is necessary to secure that the light in a desired position is both sufficiently strong and comes from the correct direction. In other cases, a number of people are equally distributed over the floor space of a room, and all desire to be able to read or write with comfort. In this connexion we may mention the important question of schoolroom lighting. The recent experiments of Prof. Scott in America showed that in many cases the illumination in the portions of schoolrooms most remote from the windows was very far from being satisfactory, and it seems to be admitted that in this country likewise the conditions are not always all that could be desired. Architects may do most valuable work by drawing attention to such defects, and co-operating with those responsible for the provision of artificial lighting in schools in order to see that adequate arrangements are made in the future.

Light must also be regarded as often intended simply to exhibit objects of decorative and artistic value—mouldings, friezes, and architectural features generally. In some cases this object has to be accomplished conjointly with the production of illumination for purely utilitarian purposes. In others the æsthetic may be said to be the predominant or even the exclusive aspect to be considered.

The nature of the contents of a room or building which we desire to exhibit must often influence both the quality and quantity of light desirable, quite apart from any conventional standard as to what constitutes a "good" illumination—by which is usually meant a good reading or writing illumination.

One cannot but feel that the lighting of many historic buildings and churches, &c., has often been carried out in a casual and unsatisfactory manner without receiving the care and study that such illumination demands.

Architects themselves would doubtless be the first to acknowledge that the utilization of light for purely decorative purposes deserves far more study than the subject has received at present. We are constantly erecting buildings in our streets which, we consider, improve the appearance of our city by day, but are hardly visible by night. Something might doubtless be done to illuminate the exterior of such buildings in such a way as to produce a tasteful and artistic effect. Again the value of soft and diffusing sources of light as objects of decoration pure and simple certainly deserves more general appreciation.

There is also a wide field for the application of artistic principles to fixture design. The relation of these to their surroundings is certainly not as generally respected as the architect would desire, and it rests largely with him whether this point is sufficiently respected among engineers in the future. At present the difficulty is not that the latter are not anxious to learn what really constitutes æsthetic illumination, but that information on such points is not readily accessible or is presented in technical form not readily assimulated.

There has been a deplorable impression among both architects and engineers in the past that their views as regards questions of utility and artistic appearance were necessarily at variance. In reality the aims of engineer and architect are alike; both desire to produce a system of illumination best adapted for the purpose in view, but for want of the opportunity of discussing these questions each has occasionally failed to be sufficiently sympathetic with the objects with which the other is mainly concerned.

We have already suggested how valuable would be the co-operation of the architect in leading to a more general appreciation of what really constitutes artistic lighting. It is equally true that the architect would benefit by the co-operation of the engineer.

It may fairly be urged, too, that the requirements of illumination from a physiological standpoint would in the long run be found to be in harmony with the principles of the æsthetic lighting.

In short, the requirements of good light from these three points of view, the utilitarian, physiological, and æsthetic, are not necessarily inartistic. In certain cases each of these aspects becomes the predominant one. The expert illuminating engineer of the future must be a man who is conversant with all three, and is able to judge the claims of each in an impartial manner. By the co-operation of those chiefly connected with one or other of these three aspects their relative importance in special cases will gradually come to be appreciated, and thus the impartial expert may eventually come into existence.

Lectures or Papers.

Not all of us, says the *Building News*, have the power of lecturing extemporaneously from a few notes, and holding a technical audience spell-bound for the greater part of an hour while dealing with a subject of considerable scope and complexity. The Rev. Percy Dearmer accomplished this at the last meeting of The Society of Architects, and public lecturers frequently do it, but it is seldom attempted at scientific and artistic societies. At the Institute, for instance, it is rarely, if ever, done; yet there is a great deal to be said in favour of it in preference to the reading of a carefully-prepared and highly-elaborated paper. Given the gift of oratory, and logical arrangement of facts, it is possible for the lecturer, speaking freely and not having any "book" to hamper him, to get at the heart and intellect of his hearers, and to make them feel as he feels, to understand as he understands. No two audiences are alike, and lecturers necessarily themselves vary; but the skilled speaker can use these changes to his own advantage. Failing to catch attention in one way, he can get it in another. He can instinctively feel when he is treading on dangerous ground; he can tell whether he is in sympathy or out of sympathy with those before him; and he can vary his discourse accordingly, emphasising points which he feels have not been fully understood on his first statement of them, driving home arguments which may seem difficult to grasp at first, skating lightly over thin ice, and generally treating his hearers as a great musician would treat an instrument upon which he might be playing. Nothing like this can be done if the lecture or paper has been written and is merely read, however good the reading may be. The literary standard may be higher, and, in fact, is almost sure to be so, and the intellectual treat may be the greater in this sense; but it is quite a common thing to hear the remark, "I shall understand what the lecturer has been driving at better when I read his paper." The fact of the matter is that written words and written arguments are best comprehended if they are read and not spoken. The lecturer who speaks extemporaneously generally uses at the moment his intellectual powers to the full. The spoken word appeals to those who hear, and the extemporary lecture is the best for the immediate audience. We venture to think, therefore, that it is probably the best method of addressing provincial societies who publish no records of their proceedings, and whose members, if they wish to know what takes place at a meeting, must attend in person.

Whether it is best at meetings of the greater societies is another question. The Institute, the Society, and the Association, all publish the papers read at their meetings, it being generally understood that they shall be papers which are to be read, and not lectures which are to be delivered. Most members of the Association at any rate, most of the active members—live in London, and could attend if they

cared to do so, and in their case the extemporary lecture would often be preferable to the written paper. The Institute, on the other hand, contains a large proportion of provincial members, while in the Society the London membership is small. The result in both cases is that meetings are often scantily attended, and exceedingly valuable discourses are delivered to half-empty benches. Even the ablest speaker cannot do his best when he is talking to an empty room, and, however brilliant he may be, he can reach only those who are directly in front of him. When those addressed are reached by printed matter, the written paper has very considerable advantages.

Of all methods of dealing with the addresses laid before formal meetings, the written paper is best if it is to be published officially to the members, and unofficially by the technical Press, for so it reaches a large audience, and exerts an amount of influence which it is difficult to measure.

Hayles Abbey, Gloucestershire.

In the *Journal* for October, 1900, an interesting account was given of Hayles Abbey, by Canon Bazeley. Since then further excavations have been made, under the direction of Mr. St. Clair Baddeley, J.P., President of the Bristol and Gloucestershire Archæological Society, and as a result, nearly the whole of the Conventual buildings have been unearthed, and a complete plan of the Abbey can now be made. The illustrations show four of the carved bosses from the groined roof of Chapter House, which have been found, and are excellent examples of 13th century carving. Other bosses of the 15th century have also been found, which will be illustrated in a later issue.

How to Become an Architect.

There are two ways in which a young man may become an architect, say Mr. F. M. Holmes in an article in the April number of *Cassell's Magazine*, and he goes on to describe the two methods, pointing out the advantages and disadvantages to be gained by adopting either. The probable cost of both ways of entering the profession is also given. "The Society of Architects," says Mr. Holmes, "has somewhat different aims from the Royal Institute. It has, indeed, a very full syllabus of examination, including sanitation, also design and practice as regards quantities and prices; but, also, it is the only professional body which has made the registration of architects its principal aim. At the present time any person may declare himself an architect, and this Society is strongly in favour of compulsory education and subsequent statutory registration of architects. With this object in view, it is promoting a Bill in Parliament drawn on the lines of the Medical Act."

The Society of Architects.

Students' Design Competition.

The following competition is open to Students of the Society, and the winner will receive a prize of the value of £3 3*s*., presented by Mr. G. E. Bond (Vice-President), who will also give a second prize of the value of £1 1*s*. if more than six sets of designs are received. The decision of the Council will be final on any matter arising out of the competition.

Subject.

Stabling for a Country House; the following accommodation being required :—

On Ground Floor.—Four Stalls, two Loose Boxes, combined Coach House and Garage, for four carriages and a motor car, with the necessary pit, etc.; Harness Room, covered Washing Sheds and Washer's Room, fitted with copper, sink, and corn shoot.

Accommodation in stable yard for manure pit, w.c. and urinal, etc.; the drainage to be shown to a definite point.

On First Floor.—Accommodation for a married man, containing living room, scullery, three bedrooms, larder, bath, and usual offices; also hay and corn store.

A level site, about a quarter of an acre in extent, may be assumed as available.

The total cost of the buildings is not to exceed £2,000.

Drawings Required.

Plans, elevations and sections to $\frac{1}{8}$ scale, with a block plan showing drainage to $\frac{1}{16}$ scale, and one sheet of $\frac{1}{2}$ in. details, showing section through one stall.

Also a perspective sketch in colour, or black and white.

The drawings to be executed on Imperial size sheets, and mounted on strainers or millboard, limited to three sheets. The method of estimating the cubical size, the price per cubic foot allowed, and the materials proposed to be used, must be noted on one of the drawings.

Drawings must be executed in black and white and marked with a motto. The name and address of the competitor must be placed in a sealed envelope which must be attached to one of the drawings.

Date of Delivery of Drawings.

The drawings must reach the Secretary on or before Friday, May 1st, 1908.

Design Competition for an Advertisement Block.

A Prize of the value of Three Guineas is offered by the Building Acts Fire Escape Co., to Students of the Society only, for a sketch illustrating to the best advantage the value of being able to obtain access to the roof in case of fire, by means of a trap door. The sketch which is intended for advertisement purposes should shew an outside view of the roof, as well as the top part of the staircase with one or more persons escaping. The careful shewing of the actual mechanism of the apparatus is not of primary importance, and the size of the sketch is immaterial.

The block at present in use may be seen on page XI of our advertisement column.

The following are the conditions laid down:

1. Designs must reach the B.A.F.E. Co., 4, Southampton Row, W.C., not later than April 30th, 1908.
2. The Company are the sole judges of the designs, and reserve the right to vary or withhold the Prize should they deem it necessary to do so.
3. The accepted Design to be the property of the Company, the others being returned to the Competitors.

Any communications relating to the Competition must be addressed to the Company.

The Architectural Scholarship (1908).

Value £10 per annum, tenable for Three Years.

There will be a competitive examination in the form of an Essay on Architectural History, and a Freehand Drawing, held on *May 7th*, 1908, *entries for which must be made before May 1st.* No entrance fee is required. Maximum age limit 19.

Entry form and full particulars may be obtained of the Secretary.

The Travelling Studentship.

Value £25 and a Silver Medal.

Subject for the Design Competition, 1908.

A Public Library on the open access system, to be erected on a level corner site open on two sides. The estimate of cost is not to exceed £5,000.

Drawings must reach the Secretary not later than May 1st, 1908. Copies of the conditions, site plan, and other details, may be obtained on application to the Secretary.

Artificial Illumination from the Architect's Standpoint.

The high intrinsic brilliancy of most lights is largely, in the opinion of Mr. Waldo S. Kellogg, responsible for an immense part of the light usually wasted. In figuring on a high efficiency the maker forgets that the dazzling effect of an unshaded light so blinds the eye, that a much higher degree of illumination is required. In thus getting, for advertising purposes, a slightly higher theoretical efficiency, practical considerations are lost sight of. If the makers of lamps considered the best interests of the consumer, rather than the seller of current or gas, well-shaded lamps would be the rule, and not a special article supplied reluctantly at a price calculated to discourage their use.

The so-called 16 candle-power lamp has become the generally accepted lamp, but recently the tendency seems to be toward more powerful lamps, not because there is a demand for them, but by reason of improvement in lamp efficiency. It was remarked above that manufacturers catered to distributors of light, hence to induce them to take up their lamp, new units are made up using the former amount of gas or current, and a great noise is made about the intensity of illumination. If the public can get an innings it may pay to advertise. "We can give you the same light for half the money," instead of as now, "For the same money we can double your illumination."

There is no generally accepted standard lamp rating, except such as best suits the eccentric distribution of the lamp for which, at that moment, some manufacturer is claiming the merits of all other lamps besides other virtues. The candle is a reasonably satisfactory unit of measure, but the rating of lamps in candle-power should mean something and enable one to judge what the illuminating value really is. Spherical candle-power rating is a fair basis of comparison, and until the spherical rating is adopted, no one, except he is able privately to ascertain the true rating, is prepared to say that a certain intensity of illumination can be obtained by using a given number of lamps of one kind or a different number of another kind. If without means to get data he must, to protect himself, put in outlets for two, and to be really safe, three times the number of lamps the manufacturer's rating in candle-power calls for, and the client is apt to complain of large lighting bills. It is in this necessity for protecting himself that the architect lays the foundation for the unpopularity of the light distributor.

In all cases a lamp should be so constructed as to harmonize with its architectural surroundings. In a carefully designed building the lamp, with as small a sacrifice of efficiency as possible, must conform to the architectural background. Thus, when a manufacturer professes to be unable to adopt a standard design to suit the architect's ideas, he must expect to be told that if such is the case the lamp will not be used, as considerations of efficiency are of less importance than the æsthetic ones.

The colour of any light plays a more important part than some manufacturers like to believe. Man has become so accustomed to the warm glow of candles or similar light that in domestic work he prefers a light of this colour, and a bluish white or greenish white light will be used only when a very strong light is needed. Women say that candle light adds to their natural attractiveness, and with them in opposition the sickly light is very heavily handicapped.

The architect is employed to make a structure both convenient and beautiful, and in doing this it is often necessary to sacrifice so-called practical considerations for others of an æsthetic nature naturally of great importance in the practice of a fine art.

Meetings and other Fixtures of the Society.

Session 1907-8.

Subject to such alterations and additions as may be announced from time to time in "The Journal" or by circular.

1908.

April 9th. Committees, Council, and Ordinary Meeting. Paper by Mr. Alfred Hands, on "Protection against Lightning."

„ 14th to 16th. Examinations for Membership, London and Manchester.

„ 17th to 20th. Offices closed. Good Friday and Easter Monday.

„ 30th. Interim Committees.

May 1st. Last day for delivery of Travelling Studentship Drawings, and for Entries for Scholarship Examination.

„ 7th. Scholarship Examination.

„ 13th. The Society of Architects Lodge Meeting, Liverpool Street Hotel, E.C.

„ 18th to 24th. International Congress of Architects, Vienna. Delegates from the Society: Mr. R. Frank Vallance, F.R.I.B.A., President, and Mr. Ellis Marsland, Hon. Secretary.

„ 21st. Committees, Council and Ordinary Meeting. Paper by Mr. A. W. Rimington (Hon. Member), on "The Decline of the Gothic Revival in England, some of its Causes and Results."

„ 22nd. Annual Dinner, Trocadero Restaurant.

June 8th. Whit Monday. Offices closed.

„ 12th to 15th. Summer Meeting at Mansfield.

July 13th „ 18th. Royal Sanitary Institute Congress, Cardiff. Delegates from the Society: Messrs. James and Morgan, FF.R.I.B.A.

„ 18th „ 24th. Royal Institute of Public Health Congress, Buxton. Delegate from the Society: Mr. W. R. Bryden, F.R.I.B.A.

Electric Light as Related to Architecture.

In speaking about electric light as related to architecture, Mr. C. Howard Walker, writing on the Transactions of the Illuminating Engineering Society, takes the architect's point of view, that is, to consider that when architecture is illuminated decoratively, it is not so much for the purpose of displaying the lamps as it is for the illumination of the architecture itself; which is a somewhat difficult problem, as our architecture is so diverse, and as most of it is far from being good. The illumination of architecture must be considered discriminatively. There are many buildings which would be very much better if they were not illuminated, and upon those buildings electric lamps may be placed, of which the effect is better than the architecture. There are buildings which have architectural merit, and in lighting those buildings, discrimination is necessary, and suppression of direct electrical effect is advisable if the building is to be shown at its best.

The factors which influence the electrical illumination of architecture can be readily analyzed; first, in regard to the character of the lighting; second, in regard to its position upon the buildings. The effects desired may be obtained by reflected light, the source of the light itself being concealed; by diffused light, shining through some translucent substance interposed between the light and the spectator, or by direct light, in which each source of light is undisguised.

Light effects obtained by outlining the buildings by lamps are independent of their background, except in so far as they follow its lines; as far as its masses, surfaces, and details are concerned, the lamps might as well be erected as a framework in the air. They are merely set pieces of permanent fireworks.

Diffused lighting through translucent material serves both to soften direct lighting, and also to afford a luminous background to inscriptions, devices, and other details, or to form conspicuous luminous areas.

Reflected lighting brings out the surfaces and details of a building in much the same way as does moonlight. As a matter of fact, all architecture is designed for effect by reflecting the light of the sun and, being so designed, it is but natural that it should appear at its best under artificial light when that light is reflected by the architecture. But the light reflected by architecture by day comes from one direction only, and produces shadows in one direction only, while that produced by artificial light must be received from several sources and directions. Artificially lighted architecture, therefore, depends for its effect more upon lighted areas than upon its shadows, these latter being constantly reduced by cross lights. The architectural skeleton, therefore, the cornices, beltcourses, columns, &c., are defined more by high lights than by heavy shadows, and these

high lights should be more evident upon the projections than in the recesses. A dark building with light trims is always more satisfactory than a light building with dark trims. The latter seems like a photographer's negative, and much of the electric lighting of buildings also has this effect.

The fact that a line of lamps at the top of a cornice is usually satisfactory, is due largely to the fact that they illumine a strong structural projection, and produce the high light where it was intended in the design of the building. And in most buildings the horizontal lines are the proper ones to accent, especially if direct lighting is to be used.

The outlining of vertical structure, excepting in isolated towers, tends to diminish the effect of space, and should be avoided.

It is the constant practice to outline an arch, merely because it is an arch, regardless of its relation to the remainder of the lighting. When the arch is a continuously repeated factor, as in an arcade of considerable length, of at least seven or more arches, it becomes a major factor, and can be satisfactorily outlined; otherwise it is isolated and of little value. This does not, of course, apply to large central portal arches.

The outlining of openings tends to nullify the proper effect of architecture. The penetrations of a building should be maintained, and the thickness of wall and the reveals shown by reflected light.

The general indications, therefore, for good electrical illumination of architecture are these: First, that such illumination is best obtained by reflected lighting; second, that when the direct lighting is associated with reflected lighting, as it needs must be, a new and entirely separate intent is introduced; *i.e.*, that of making a design in light itself associated with the architecture, and indicating its structure, but not its masses. All devices of lights only are of value for their own intrinsic beauty alone, having nothing whatever to do with the architecture, excepting that they indicate axes or terminations.

As vertical lines of light tend to diminish effect of space, they should be avoided, and horizontal lines of light which assist the effect of perspective and space should be used. It is manifest that reflected lighting must be produced from sources of light at some little distance from the surfaces lighted, and some of the most successful illuminations of architecture have resulted from combinations of direct lighting in horizontal lines, and reflected light from standards or large lamps away from the building. Wall-brackets and lamps in ceilings of porticoes, &c., are always successful.

It is natural that there should be a desire for some coloured light, merely as an effect of colour. If this is used, the effect is merely spectacular. Foci of colour, or entire lines of colour, may occur, but white light tempered by ground glass is the

most permanently pleasing. If colour is used, alterations of strong colour, such as red and blue, are not nearly as effective as alternate lamps of white and colour. Variations of candle-power in arrangement and grouping of lights afford opportunities for very pleasing effects.

For instance, the main factors of a building, the cornices and lintels, would have a higher candle-power than the candle-power of the small details. Very often this is reversed, and the effect of the architecture thereby destroyed.

The architect, as his name indicates, is the chief builder and constructor. His building should be solid, it ought to appear to have a strong structure, and it should be made in beautiful proportions. It is erected for daylight purposes. If it is successful at all, it should be best in daylight. The illumination which throws cross lights, and which has centres of reflection which grades into shadows, is a fairly low illumination; it is unsubstantial illumination; it begins to make architecture not so much solid as ephemeral. It has a beauty of its own; it is theatrical. The motif of reflected light from above, which has in it luminous deep shadows, is excellent lighting by night. It gives a new pleasure, and is perfectly consistent with any good architecture, but it is different from the daylight. The architect is designing for daylight, and if he cannot design a building that looks better for the time for which it is designed than it does when lighted in another manner, he has not succeeded.

Photographic Survey and Record of Surrey.

The work of this Association is to preserve, by permanent Photographic process, Records of Antiquities, Anthropology, Buildings of interest, Geology, Natural History, Passing events of local or historical importance, Portraits of notable persons, Old Documents, Rare Books, Prints, Maps, and Scenery, so as to give a comprehensive survey of what is valuable and representative in the County of Surrey.

This work is carried on by means of six Sections, *i.e.*, Architectural, Art and Literature, Anthropological, Geological, Natural History, and Topography and Passing Events, each Section being under the direction of a Committee.

The Honorary General Secretary is Mr. F. F. Wood, 11, Milton Road, Wallington, who will be glad to issue a form of " permit " free of charge to any member of an affiliated Society who makes application for it through the Society's officials.

The Society of Architects is represented on the Committee of the Architectural Section by Mr. B. R. Tucker.

Mainly about Members.

Mr. T. J. Byrne has been appointed architect for the new church to be built at Ranelagh, Dublin.

The architect for the erection of new schools, caretaker's house, &c., in New Road, Chingford, for the Essex Education Committee, is Mr. Walter Stair, 9, Queen Victoria Street, London, E.C.

Among the architects selected to submit competitive designs for the proposed new High School for Girls, at Stockport are Messrs. Hunt & Baldwin and Mr. P. Peirce, of that town.

Mr. A. R. Galbraith, of Portsmouth, has been transferred to full membership of the Institution of Civil Engineers of Ireland, and has also been elected a member of the Council of the Society of Engineers in the place of Mr. John Aird.

The Walthamstow Education Committee have accepted Messrs. J. E. Hammond and Son's Tender of £10,963 for two additional Blocks of School Buildings to accommodate 440 boys and 440 girls, also a caretaker's house, at Selwyn Avenue, Highams Park, from plans prepared by the Committee's Architect, Mr. H. Prosser.

Plans have been prepared by Mr. W. D. Wiles, County Architect, Denbigh, for a new Council school which the education authority proposes to erect at Brymbo. The school is to accommodate 538 children—380 mixed children, accommodated in seven classrooms, and 158 infants, accommodated in three classrooms.

The Baptist fraternity at Upper Parkstone have now entered into possession of their new Tabernacle, which stands at the junction of Ashley and Lake roads. The building has cost about £4,500, seating about 750 people, and capable of being extended to accommodate about 900. It is built of red brick and Bath stone. The architects were Messrs. Lawson & Reynolds, of Bournemouth.

At the annual dinner of the Bishopsgate Ward Club, held last month at the Great Eastern Hotel, E.C., the principal incident was a presentation to Mr. A. E. Pridmore, ex-President of The Society of Architects, of a silver salver, subscribed for by the members, in recognition of his fourteen years' services in the Court of Common Council. The president, Mr. Louis Bamberger, referred to the fact that Mr. Pridmore was, on each occasion of a contest, elected at the head of the poll.

Extensive alterations are to be carried out to Queen's Club, West Kensington, under the direction of Mr. George P. Allen, architect of Arundel Street, Strand. The plans which have been submitted to the Directors of the Club consist of the building of a large billiard room and alterations comprising new smoking lounge, members' bar and office and other minor alterations. Mr. Allen's experience of club building should be of great value to the Committee as he has carried out additions to some of the leading clubs in London.

Donations and Gifts to the Library.

The Hon. Librarian acknowledges with many thanks the receipt of the following donations and gifts to the Library.

Bernard W. Triggs (Member)	£2	2	0
Peter Pierce „	2	2	0

A new Catalogue has been compiled, and is now ready. Copies may be obtained of the Secretary. Price, sixpence each.

Ordinary Meeting.

The Sixth Ordinary Meeting of The Society of Architects, for the Session, 1907-8, will be held at Staple Inn Buildings (South), Holborn, W.C., on Thursday, April 9th, 1908, at 8 p.m.

Agenda :—

1. The President to take the chair.
2. Minutes of the last Ordinary Meeting.
3. Nominations for Membership.
4. Ballot for the following Candidates.

For Honorary Membership :—

Stone. Sir J. Benjamin, M.P.,	The Grange, Erdington.

For Membership :—

Bothams. Alfred Champney,	32, Chipper Lane, Salisbury.
Brewer. Frank Wilmin,	11, The Green, Richmond, Surrey.
Chadwick. Arthur Smethurst,	78, King Street, Manchester.
Murgatroyd. Arthur James,	23, Strutt Street, Manchester.
Oman. William Campbell, A.R.I.B.A.,	P. W. D., Singapore.
Taylor. Alfred John,	18, New Bond Street, Bath.

For Studentship :—

Berrow. Thomas Joseph,	43, Talbot Street, Cardiff.
Clark. Frank Townson,	18, Craven Street, Newbury, Berks.
Harland. Norman Gregory,	43, Elmcroft Street, Clapton, N.E.
Hughes. Thomas Harold,	Abbey House, Cobridge, Stoke-on-Trent.
Jumper. Frederick,	High Street, Epping.
O'Hanlon. Vincent Henry Edward	116, Rathgar Road, Rathgar, Dublin.
Peters, Kershaw,	159, Boundaries Road, Balham, S.W.
Picton. Clement John,	10, Norton Way, Letchworth.
Somerville. Alexander,	69, Warrender Park Road, Edinburgh.
Walton. William Billington,	27, Birley Street, Blackpool.
Welch. Herbert Arthur,	35, South Grove, Highgate, N.
Westbye. Johannes Thorwaldson,	14, Great Ormond Street, W.C.

5. Paper on "Protection from Lightning." By Mr. Alfred Hands, F. R. Met. S. The paper will be illustrated by experiments and reproductions on models of buildings, of some actual occurrences.

THE
Journal
OF
The Society of Architects

FOUNDED 1884. INCORPORATED 1893.

Including Transactions and Architectural Notes.

No. 7. Vol. I.] **MAY, 1908.** **[New Series.**

The Society is not, as a body, responsible for the opinions expressed by individual authors and speakers.

Robert Frank Vallance,

Elected President, October 17th, 1907. Died, April 18th, 1908.

A great and serious loss has befallen The Society of Architects in the death of its President, Mr. R. Frank Vallance. Unanimously elected to that office only six months ago, his work for the Society has already borne fruit in the considerable increase in the membership, due to his influence and to his attitude on the question of " Registration."

It was on February 13th that Mr. Vallance last occupied the Chair, when he was apparently in good health; shortly afterwards he was stricken with rheumatic fever, and after a brave fight he has passed away at the comparatively early age of 51, to the great grief of all who knew him.

Only last month the Council postponed the Annual Dinner, hoping for the President's recovery during the summer, though they decided to abandon the visit to Mansfield, but it was not to be, and the Society mourns its President and many of its members an old and valued friend.

The late President was elected a Fellow of the R.I.B.A. in 1891. He joined the Society of Architects in 1890, served in its Council from 1897-99, and again from 1903-5, when he was elected a Vice-President.

Of a kind and genial disposition, courteous and considerate in his dealings with others, ever ready to advance the interest of the Society or its members, he won the confidence and respect of his colleagues, and adorned the position to which he was called.

The late President was a widower and is survived by a daughter, and to her and his sister, Miss Vallance, as well as to all his relatives, we extend on behalf of every member of the Society our deepest sympathy in their irreparable loss.

American Architects' Charges.

The New Schedule Criticised.

The American Institute of Architects has, says *Art and Architecture*, recently adopted a new schedule of charges, for in the United States, as elsewhere, it has long been felt that some reform was necessary in computing the remuneration an architect should receive for his work. A percentage basis is always inequitable and sometimes absurd ; and, owing to the peculiar relations that exist between owner and architect, it must be always more or less unsatisfactory and open to suspicion. For the position is practically this : the owner says in effect to his architect : "I want you to design me a building that will not cost more than such a sum, and I expect you to exercise every care in order that the amount mentioned shall not be exceeded. In this work I look to you for advice in all matters of expenditure, and I know very well that such advice, if honestly given, must be often contrary to your own interests ; but then it is part of your business to give honest advice. It is your duty to save me all unnecessary expenditure. If the building satisfies me when it is finished, I will pay you five per cent. upon the total cost, and for every pound you save me *I will deduct one shilling from the amount of your commission.*" Is ever such a foolish contract entered into in any other profession ? In every other walk in life, the man who is placed in a position of trust is paid to protect the interests of his employers. Apart from any sense of personal rectitude he may possess, he is made to feel that it is to his material interest to be honest. If he is not, then his employers, some day, may have to suffer for their short-sightedness. The architect's client would probably retort that all this has nothing to do with him, the basis of payment and the amount to be paid having both been fixed by the architects themselves. He merely conforms to custom. This is perfectly true, and consequently any reform in this ineffably stupid mode of payment must proceed from the governing bodies of the architectural profession.

The charges are just as unfair to the client in many instances. A depth much greater than that specified may be found necessary in the foundations, or it may be considered advisable to increase the height of the walls. All this can be done without any extra trouble or expense to the architect, and yet he charges his commission upon the total cost. Of course, on the other hand, he is expected to be equally ready to reduce his fees if the cost of the building should be reduced. Any way one takes it, the system is an absurd one. A large shed, involving very little thought or trouble, will bring in a commission equal to that earned in designing and supervising the erection of a comparatively ornate residence, if the total outlay be the same in each instance ; and the man who conscientiously devotes all the skill and care at his command to the production of an architectural work of art earns no more than

the one who is content to erect any structure upon which an equal amount is expended that will satisfy his employer. This difficulty has arisen because in the first instance five per cent. was fixed as the minimum, and in course of time it has come to be looked upon as the maximum fee to which an architect is entitled.

The American Institute of Architects has lately revised its schedule of charges, in the hope of remedying some of these anomalies; but the result is somewhat disappointing. On the first $10,000 of cost it is proposed that the charge shall be 10 per cent.; on the second $10,000 of cost, or any part thereof, 7 per cent.; on the next $30,000 of cost, or any part thereof, 6 per cent.; on any balance of cost, 5 per cent. This is all very well, but, while

> "It is the deliberate judgment of the Institute that for full professional services adequately rendered, an architect should receive, as reasonable remuneration therefor, at least the compensation mentioned in the . . . . schedule of charges, ... any variation may properly be left to individual members or chapters of the Institute."

The document is described as the "Schedule of Proper and Minimum Charges," but the Institute admits that it is both unwilling and unable to enforce them. Each member may make his own schedule; and, according to the President, his charges may be either higher or lower; the proposed schedule is only suggested as a basis. The Institute, it is claimed, is not a trades union to fix the rate of fees, and consequently each architect must do as he thinks best. This leaves things in a somewhat worse state of confusion than they were, and does nothing towards determining what a fair remuneration shall be, because custom as fixed by the smaller practitioners, who are naturally greatly in the majority, will soon over-ride any schedule of professional practice, and thus render the work of recovering the fees set down by the Institute more difficult even than it was before.

Prospects in South Africa.

No one should go to Cape Colony now in search of work. At Cape Town there is an excess of men in the building, engineering, and many other trades. At East London all branches of trade are reported to be dull. At Aliwal North there is an excess of clerks, salesmen, and labourers. At Kimberley there is a considerable number of unemployed Europeans, most of whom belong to the building trades. At King William's Town there is a considerable excess of artisans and labourers. There is no demand in Natal for any class of workman. There is a large number of unemployed in Johannesburg, and no one should think of going there now in search of work. The cost of living remains high. The supply of all kinds of labour in the Orange River Colony is more than sufficient, and miners without means are warned against going to Rhodesia.

Proceedings.

THE Sixth Ordinary Meeting of The Society of Architects for the Session 1907-8 was held at Staple Inn Buildings, Holborn, W.C., on Thursday, April 9th, 1908, at 8 p.m.

MR G. A. T. MIDDLETON, A.R.I.B.A. (Vice-President), having taken the chair, the minutes of the previous meeting were taken as read, and were confirmed and signed.

The following nominations were then announced :—

For Membership :—

CHEVERTON. CHARLES,	64a, Chapel Street, Devonport.
TOMLINSON. JOHN WILLIAM, A.M.INST.C.E.	St. Mary's Hall, Coventry.

For Studentship :—

BEST. HALSTEAD,	19, King Street, Rawtenstall.
BIRKETT. STANLEY,	25, Clyde Road, West Didsbury, Manchester.
CLARK. DAVID,	Comely Park Villa, Woodside Terrace, Falkirk.
GREENWOOD. JOSEPH,	4, Drill Street, Keighley.
HALLAS. HAROLD W.,	Ivy Lodge, Trinity Street, Huddersfield.
HENDERSON. ANDREW GRAHAM,	49, Trefoil Gardens, Shawlands, Glasgow.
IDLE. MARTIN,	99, The Chase, Clapham, S.W.
JACKSON. CHARLES ERNEST,	7, Merchiston Bank Gardens, Edinburgh.
MOORE. ERNEST JOSIAH EDWARD,	38, Chepstow Road, Newport, Mon.
WILLS. FREDERICK JOHN,	34, Compton Road, Canonbury, N.

The ballot was then taken and the following candidates were declared to be duly elected :—

As an Honorary Member :—

STONE. SIR J. BENJAMIN, M.P.,	The Grange, Erdington.

As Members :—

BOTHAMS. ALFRED CHAMPNEY,	32, Chipper Lane, Salisbury.
BREWER. FRANK WILMIN,	11, The Green, Richmond, Surrey.
CHADWICK. ARTHUR SMETHURST,	78, King Street, Manchester.
MURGATROYD. ARTHUR JAMES,	23, Strutt Street, Manchester.
OMAN. WILLIAM CAMPBELL, A.R.I.B.A.,	P. W. D., Singapore.
TAYLOR. ALFRED JOHN,	18, New Bond Street, Bath.

As Students :—

BERROW. THOMAS JOSEPH,	43, Talbot Street, Cardiff.
CLARK. FRANK TOWNSON,	18, Craven Street, Newbury, Berks.
HARLAND. NORMAN GREGORY,	43, Elmcroft Street, Clapton, N.E.
HUGHES. THOMAS HAROLD,	Abbey House, Cobridge, Stoke-on-Trent.
JUNIPER. FREDERICK,	High Street, Epping.
O'HANLON. VINCENT HENRY EDWARD	116, Rathgar Road, Rathgar, Dublin.
PETERS, KERSHAW,	159, Boundaries Road, Balham, S.W.
PICTON. CLEMENT JOHN,	10, Norton Way, Letchworth.
SOMERVILLE. ALEXANDER,	69, Warrender Park Road, Edinburgh.
WALTON. WILLIAM BILLINGTON,	27, Birley Street, Blackpool.
WELCH. HERBERT ARTHUR,	35, South Grove, Highgate, N.
WESTBYE. JOHANNES THORWALDSON,	14, Great Ormond Street, W.C.

The Chairman intimated that in order to admit of those students, who had just been nominated, participating in the Travelling Studentship Competition, it was necessary that they should be put forward for election that evening, he therefore proposed to take a vote by show of hands for their election.

The meeting having agreed, the motion was put and the Chairman declared the following to be duly elected :—

As Students :—

Best. Halstead,	19, King Street, Rawtenstall.
Birkett. Stanley,	25, Clyde Road, West Didsbury, Manchester.
Clark. David,	Comely Park Villa, Woodside Terrace, Falkirk.
Greenwood. Joseph,	4, Drill Street, Keighley.
Hallas. Harold W.,	Ivy Lodge, Trinity Street, Huddersfield.
Henderson. Andrew Graham,	49, Trefoil Gardens, Shawlands, Glasgow.
Idle. Martin,	99, The Chase, Clapham, S.W.
Jackson. Charles Ernest,	7, Merchiston Bank Gardens, Edinburgh.
Moore. Ernest Josiah Edward,	38, Chepstow Road, Newport, Mon.
Wills. Frederick John.	34, Compton Road, Canonbury, N.

The President's Illness.

The Chairman reported that in consequence of the severe and continued illness of the President, Mr. R. Frank Vallance, F.R.I.B.A., the Council had found it necessary for administrative purposes to appoint him (Mr. Middleton) as Acting President for the time being, and to postpone the Annual Dinner fixed for May 22nd, until October 14th, the day previous to the Annual Meeting, in the hopes that before that time Mr. Vallance might be well enough to resume his duties.

It had also been deemed advisable to cancel the proposed summer excursion to Mansfield and to substitute for it one or more shorter excursions during the summer. Every member would regret the circumstances which necessitated these changes in the Society's programme and he asked those present to allow him to convey to Mr. Vallance an expression of their sympathy with him in his illness, and their best wishes for his restoration to health. This was unanimously agreed to.

Mr. Alfred Hands, F.R.Met.S., then read a paper on "Protection from Lightning," illustrating his remarks by experiments and reproductions on Models of Buildings, of some actual occurrences.

Mr. B. R. Tucker (London) in proposing a vote of thanks to Mr. Hands thought the subject was of the utmost importance to architects and he had seldom, if ever, seen a lecture so well illustrated. He thought the general principles of lightning conductors were the same as thirty or forty years ago, but they had that evening been instructed in many important points bearing upon their construction which clearly showed that every line of metal other than the conductor itself must be taken into consideration by architects in protecting

their buildings, otherwise the result might prove disastrous. It had been generally known for a long time that a tower or spire of a church should have a vane or lightning conductor which should be connected with a continuous line of metal until it entered the earth, the latter being moist to carry away the discharge more efficiently; but there were other new points to which the lecturer had drawn their attention, particularly the "surging" effect referred to. It behoved architects and engineers to carefully consider the effect of lightning on the metal used in the construction of their buildings in any shape or form. Their duties as architects would be more completely carried out if due attention was given to this most important subject.

Mr. E. J. Sadgrove, f.r.i.b.a. (London) seconded the vote of thanks for the address, which had been delightfully interesting to him.

Mr. Sidney Gamble, a.m.inst.c.e. (Divisional Officer London Fire Brigade), said that some eighteen or nineteen years ago a church at Grantham was struck by lightning, which had fused the gas pipe and ignited the gas inside the tower staircase. On inspection he found that the conductor was held at one spot by a staple driven into the wall while a corresponding staple held up the gas-pipe within, thus amply bearing out Mr. Hands' theory. An expert called in to give advice on the matter, stated that the cause of the short circuit was due to the terminal of the conductor being in dry instead of moist earth and in consequence considerable expense was incurred in putting in charcoal to prevent further mishap. It did not occur to anyone to put the conductor on the other side of the tower staircase which could very easily have been done. A medical man had informed him that a person struck by lightning could be resuscitated by the same methods as those employed in the case of a person partially drowned. He thought it was worth remembering although he had not had occasion to try it.

Mr. Marriott (Secretary, The Royal Meteorological Society) said the subject of Lightning was one which had fascinated him for many years. He referred to the Conference arranged by the Royal Meteorological Society, the R.I.B.A. and other Institutions some thirty years ago for the purpose of considering the effect of lightning and the best methods of protection. The conference, he said, sat for two or three years and issued a valuable report which was unfortunately out of print, and he thought that the conclusions come to by the conference were accepted by those who considered the matter thoroughly, both in this country and others, as perfectly sound. A further conference had taken place within the last few years but he could not say that all their conclusions were to be accepted. He had hoped Mr. Hands would have shown some photographs of lightning flashes, which were most interesting. A flash sometimes travelled a great distance, and it had been reported to him from Glasgow that an observer had seen a flash extend over five

miles, at any rate they had photographs which indicated that a lightning flash sometimes took a long route. The speed at which lightning travelled could be taken as one mile every four or five seconds, so that they could easily calculate its distance away. The apparent flickering of a lightning flash was due to a succession of flashes following as nearly as possible the same path and to the eye appearing to be one. With regard to the surging effect which Mr. Hands had mentioned he had himself been a victim when seeking shelter in a tent, the current passing through him with sufficient strength to make him uncomfortable. The diagram showing the cases of damage from lightning about the country was very interesting. The effect of lightning on the human body was very curious in some cases, and he cited a case where a man standing on the top of a hay-cart was struck, and his companions said they saw him jump four or six feet high before he fell. In another instance two men were struck as they were sitting under a tree; one was subsequently found on the opposite side of the tree and his companion on the other side of a neighbouring bush. He supposed the fact that they jumped was due to involuntary muscular contraction caused by the lightning stroke. They had heard a good deal about damage by defective conductors and the remedy, they had learnt how to resuscitate people after being struck by lightning, but what they wanted to know was how to avoid the lightning. They should not get under a tree nor near any metal, and not always in the actual open field. He was speaking about lightning at a lecture some two years ago and saying that he thought the open space was the best place to get when somebody immediately stated that two of his friends had been struck whilst crossing a field.

Mr. Ellis Marsland (Hon. Secretary), expressed his thanks to the lecturer, and said it was very seldom that they heard a paper combining theory and practice. He mentioned in support of Mr. Hands theory about the radiating effect of lightning, the fact that his own house had been struck, not directly but through the adjacent church, the current eventually dispersing through the bell-wires of his house.

Mr. P. J. Waldram, f.s.i., asked what was to be considered as a safe distance for metals from the lightning conductor, especially in regard to reinforced concrete, which he thought made a serious difficulty.

Mr. E. Ridley thought it would be of interest if they could have some information as to whether there was really any danger in large mirrors, and whether they could be protected by covering them up.

Mr. G. A. T. Middleton, a.r.i.b.a. (Vice-President), in summing up the discussion, said the matter of protecting their buildings from lightning was one which they were very apt to neglect. The customary method of protecting buildings by the ordinary lightning conductor was considered such a matter of course that an expert on the subject was rarely if ever consulted. They might talk it over with an electrical engineer who probably knew as little about it as

they. It was as necessary to consult experts upon the question of protection from lightning as it was upon other and more obstruse subjects. Architects would be perfectly justified in going to such, as they were not themselves necessarily experts upon water, electricity, or lightning conductors. It was obvious from a study of the map which Mr. Hands was compiling, that they ought to take more pains to protect their buildings from sudden destruction.

The vote of thanks was then put, and carried with acclamation.

Mr. Hands in reply, after expressing his thanks to the meeting for the reception accorded to his lecture, said that the Lightning Rod Conference report, old as it was, remained one of the highest authorities on the subject, and he considered it a most unfortunate thing that it was out of print. True, another committee had been formed in recent years, but its report was, he considered, valueless. It contained what was practically a confirmation of the Conference Report of 1882 and some added suggestions that were in complete contradiction. It was therefore a double report, one part being opposed to the other. He much regretted that, because England used to hold the premier position in regard to the subject, and every other country used to look to them for information on it, but England had lost her place.

The case quoted by Mr. Gamble was one in support of his theory—the flash passed through at the point where the two staples made the shortest gap, but they would have got that, even though the earth connection of the conductor was perfect, because the conductor was wrongly placed.

A safe distance to keep a conductor away from other earth connected metals, such as gas pipes, was four feet six inches.

In regard to ferro-concrete construction the problem became more difficult. If a lightning conductor was laid over the concrete in which was embodied the metal used in its reinforcement, a spark would occur between the two metals and in consequence the concrete would crack and wet would get in and rust the steel which was just what they wanted to avoid. The only way to deal with the matter would be for them to connect the concrete framework to the conductor system, and this should be done during the construction of the building.

The silvered backs of large mirrors were equivalent to thin sheets of metal and were therefore conductors, so when they happened to be in the path of discharges the glass was broken or the silvering melted. There was no advantage in covering them.

Large mirrors were undoubtedly a source of danger, which could be minimised by covering them.

He did not know why the jumping effect referred to occurred, but there was no question that a sudden discharge of electricity did cause a contraction of the

muscles which caused the persons concerned to jump further than they ordinarily could do. Possibly the shock being unexpected made the difference. As regards the length of lightning flashes, in this country they averaged about half-a-mile, the longest known was about 11 miles, but that, he thought, was from cloud to cloud in the rarified strata of the atmosphere where they often got longer discharges.

As regards the protection of buildings generally there was a peculiar idea that it was only the extremely high buildings which were affected, but he had given them figures which would convey to them that for every tall building struck some twenty or thirty lower ones were damaged, and he hoped the day would come when all buildings would be properly protected by comparatively inexpensive conductor systems that would prevent the deplorable loss of life and property that now so often occurred.

The Reading Room.

The Reading Room has been recently refurnished and made more comfortable for the use of Members and Students. It is available during office hours, and at other times by arrangement, and may be reserved for appointments with clients or other similar purposes, by giving due notice to the Secretary.

Architects' Benevolent Society.

Assistance from the T Square Club.

The Society of Architects is one of the patrons of the Concert which is being organised by Mr. W. J. H. Leverton of 10, Lancaster Place, W.C., the Hon. Secretary of the T Square Club, in aid of the funds of the Benevolent Society, on June 3rd. The Council hope that the efforts of the Committee will receive the hearty support of the Members. The Concert will be held in the King's Hall, Holborn Restaurant, and will be preceded by a dinner. Tickets will be obtainable either of Mr. Leverton or of the Secretary, at the Society's offices, in due course.

Students' Visit to the Bath Stone Quarries.

Through the kindness of Mr. F. S. Cotterell, J.P., Managing Director of the Bath Stone Firms Ltd., arrangements are being made for Students to visit the Companies' quarries at Corsham on a date to be announced.

The only expense to Students will be the railway fare, regarding which special arrangements are being made by the Great Western Railway Company.

Map of England and Wales

SHEWING

Damage by Lightning

FROM JAN. 1, 1897
TO MARCH 11, 1908.

By ALFRED HANDS,
F.R.MET.SOC.

This map, compiled from particulars recorded in the public press, shows the distribution of damage caused by lightning strokes and has 7793 spots; each representing an object struck, including 3401 buildings of which 211 were churches; 226 ricks and stacks; 1251 trees; 194 persons killed; 1016 persons injured; 1307 cases in which animals (varying from single ones to as many as 45 in a flock) were killed at one time; and 398 cases of damage not covered by the foregoing classes.

With a few exceptions a collection of spots represents a town, and it will be seen that the principal ones are indicated by the cases of damage that have occurred in them. Another feature shown by this map is the prevalence of damage along valleys and on low lying land.

Protection from Lightning.

By ALFRED HANDS, F. R. Met. S.

THE amount of damage caused by lightning in this country is very much greater than is generally supposed. The chart of England and Wales, which I am compiling from particulars I have collected for the past 18 years, may give some idea of its extent and distribution. The places where damage has occurred are shown by spots differently coloured according to the kind of object struck. As it is sometimes said that towns are fairly safe from damage by lightning, I may call your attention to the fact that nearly all the towns of importance are indicated by the cases of damage that have occurred in them.

At present I have completed only a little over 11 years of this chart and there are now on it 7,793 spots, of which 3,401 represent buildings. A rough analysis of these buildings shows that churches form about 6 per cent. of the total; chimney shafts about 2 per cent.; and other buildings of a lofty type about 8 per cent. This leaves about 84 per cent. of comparatively low buildings. These figures might appear remarkable if one overlooked the fact that most of the loftiest structures have been fitted with lightning conductors, because they have been considered especially exposed to be struck.

It is not possible to ascertain the number of conductors that have been struck, for, with the exception of occasions when lightning has been seen to strike, the only way one can tell a conductor has been put to the supreme test and has proved satisfactory, is by a small mark of fusion at the extreme point; but as regards the buildings more or less damaged, although fitted with conductors, I find they form about 2 per cent. of the total number of buildings damaged in this country. We are left to speculate whether the tallest buildings are, after all, less liable to be struck (a postulate that would not be reasonable) whether the points of the conductors have a very great preventive effect on lightning discharges, as theoretically they should have; or whether conductors do not usually fail when struck. The answer lies, I think, between the second and third, but principally on the preventive effect of points, for it is an undoubted fact that a large proportion of the buildings fitted with conductors are not properly protected. The conductors have not been scientifically applied and are in many cases, more or less inefficient, so if the statements sometimes made, that defective conductors are a source of added danger, were in any way warranted, we should expect to hear that a great number failed in place of the small percentage referred to; for there are an enormous number spread about the country and mostly on the buildings that have justly been regarded as the most liable to be struck. Those who make the statements, however, generally omit to give reasons for them and would, I think, find a difficulty in putting forward arguments they could uphold.

Protection from lightning is a subject that is frequently misunderstood, notwithstanding the increase in scientific knowledge generally and in electrical science in particular, but we must take into account that a knowledge of lightning effects is not generally of commercial value, protection being yet restricted in extent in comparison with other branches of the electrical industry.

We know that lightning is an electrical phenomenon, but what is electricity? A great scientist once said that this was the most difficult question ever put to him, and it is still a difficult one to answer in popular language, although easier now than in his day. You are doubtless aware that scientists have had to suppose the existence of a medium extending through all space and that this is called the ether. When I say "suppose the existence," you must not think that it is merely an hypothetical idea, not founded on known facts, for it is so far proved by the effects produced by it that there is no doubt as to its existence. We do not yet know exactly what the ether is, but we can note its effects and arrange them under different heads. The ether under stress or strain we call static electricity; in continuous motion, or locomotion, we call it current electricity. We have it in rotation or vortex motion and it produces magnetism; and in vibratory or radiatory motion and we call the effect light. We can give it a violent blow that sends waves flying through space and they enable us to telegraph without wires.

These branches differ so far that a knowledge of one does not necessarily imply a knowledge of the other. Lightning comes under the heading of static electricity which, I regret to say, is very little studied now. Students taking up electricity are generally given an elementary lesson or two in static electricity which is dismissed as a beautiful but useless toy, and they pass on to a thorough study of current electricity, which is the commercial success of the day. It is often thought that, as lightning is electricity, all electricians must, as a matter of course, be experts on lightning, and so undue importance is attached to remarkable statements made by writers who take an occasional excursion into the subject of protection. The confusion that already existed in the popular mind has unfortunately been in this way rendered greater.

I have considered it necessary to briefly refer to the ether to enable you to regard lightning as a breakdown caused by a stress or strain and not as a bolt or any form of projectile shot out of a cloud and striking an object by coming down to earth. When a thunderstorm occurs a stress is thrown on the air, either between two clouds or between a cloud and the earth, and when this stress has reached a pressure of about half a gramme weight to the square centimetre, smash goes the air—it is literally cracked. The line of the fracture is illuminated by the intense heat caused and we see this and call it lightning. Regarding a lightning flash then as a fracture that may extend through a building, we have to consider what course it will take and we

Obelisk with Conductor having Gap in Centre.

Obelisk with Conductor Outside, and Gas Pipe in Interior.

are guided by the fact that this, like every other force in nature, tends to take the easiest path ; but we have to adopt a complete inversion of ordinary ideas. Metal, usually regarded as strong is infinitely weak, while air, usually considered weak, is very strong. Masonry is between the two, being weaker than air but stronger than metal.

In the diagrams I am using, I have tried to illustrate the relative resistances or strengths by shade. The air, being strongest, is shown black ; buildings, being weaker, are shown grey ; and metals, being infinitely weak, are shown white. The varying resistances of different metals—copper, iron, lead, etc.—are so slight, relatively, that the differences in shade would be indistinguishable. The ground is shown grey near the surface to indicate dry earth, but white at a greater depth to represent moist earth, which is fairly conducting. I want you especially to note the meaning of this difference in shade because, if you adopt this seemingly " topsy-turvy " way of looking at the matter, it will not only make my explanation more clear, but will, I think, assist you when arranging for the protection of buildings.

Electrical discharges, or fractures as we are regarding them, will then take the easiest paths or, as they are called, the lines of least resistance, so if we took a piece of stone or brick and placed a line of metal along it from end to end, except for a break in the centre, so that it would resemble the obelisk in the diagram, and then subjected it to a discharge from an electrical machine ; or, if we had a real obelisk composed only of the same material, fitted it with metal in the same way, and it was struck by lightning, the flash would in either case pass along the metal. If damage occurred it would only be at the gap ; the discharge would not pass through the masonry in preference to the metal. The experiment might be repeated any number of times, either with the model and an electrical machine or the real obelisk and lightning, and the result would be the same.

A church that was struck a dozen years or more ago illustrates this. Someone was looking at the clock during a storm and declared he saw a flash of lightning strike it obliquely. It was afterwards found that the masonry was shattered between the clock face and the roof of the nave, but not higher up.

Lightning prints its own story that experience enables one to read, but I need not trouble you with the clues I found and followed up ; they were unmistakable and showed that the vane had been struck. The iron bolt rod of the vane, in place of extending down a few feet only in the usual way, was carried down the whole length of the spire and ended just above the clock works. A piece of copper wire passing across the lower end of the bolt rod to the clock formed a connecting link between the two. Then came the metal dial ; then a few feet of masonry ; and below that the lead flashing and rain pipes leading to the ground. So, there was a line of metal—an accidental conductor—from the top of the spire down to the ground,

except for a break of a few feet, and the lightning that struck the vane followed this line, being invisible to the observer until it crashed through the masonry at the gap. He saw the bright light there and (possibly quite unconsciously) imagined the rest.

Reverting to the diagram, if we completed the line of metal so as to form a continuous conductor, the obelisk would be protected. Bad joints would only cause injury to the conductor itself, and a bad earth connection might result in a barrow load or so of soil being blown up. This would be the worst that would happen unless the concussion, due to explosive force of the steam that blew up the ground, cracked the masonry slightly on the surface.

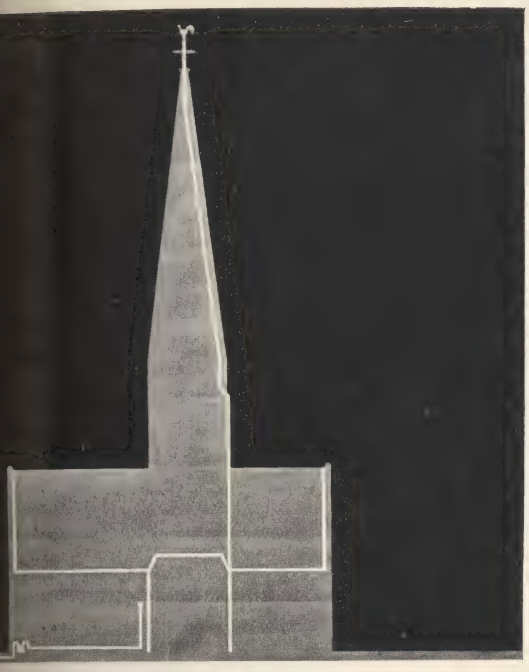
But, if in place of being solid masonry, the obelisk was built hollow, with stone steps in the interior and a gas pipe carried up inside to afford light at intervals, the problem would be an entirely different one. There would be a rival conductor in the interior—an alternative path of metal—with a perfect earth connection because the extent of metal surface of the gas main underground would afford only a nominal resistance. Therefore, if the lightning conductor had a high resistance, a part at least of the discharge would spark through the wall and pass to earth by the gas system. The earth resistance of a gas or water main is almost infinitesimal, so it is practically impossible to get an appreciably lower one for the lightning conductor. Even if we gave the latter what is called a "good earth," there would still be the rival in the interior and danger of the division of the discharge between the two paths of metal, for a foot or two of masonry (which is weaker than air) is poor insulation to withstand the enormously high voltage of a lightning flash.

For efficiency, therefore, it would not only be necessary to have a conductor with a minimum resistance, but it should be fixed on the opposite side of the structure to the gas pipe, so that there should be a sufficiently thick buffer of insulating material between the two, and the discharge would not be able to break through. The selecting of the position of the conductor is often a point on which efficiency largely depends.

A case of alternative path that occurred in the North of London, was described as follows in a list of reports issued by the recent Lightning Research Committee, *and exhibited at Earl's Court Exhibition in* 1903 :—

"Feb. 26th, 1901.—London. German Lutheran Church, Ritson Road, Dalston. Flash passed through rose window at the north end, leaving stone tracery intact, but destroying the organ immediately behind it, and setting fire to the timbers of the organ loft."

The evidence that appeared to warrant this peculiar report was the fact that the tall spire was uninjured ; on the other hand, the north window was destroyed and a fire was caused at the end of the nave that did, I believe, about £2,000 damage. According to this, lightning ignored the spire, about 170 ft. in height, that had a



-German Lutheran Church, Dalston, N.E.

ductor from vane ending in rain pipe. Alternative path l flashing round tower to gas bracket and pipe leading to meter.

Fig. 2.—Needwood Church, Staffordshire.

Lead binding of matting inside church and large stove below in vault.

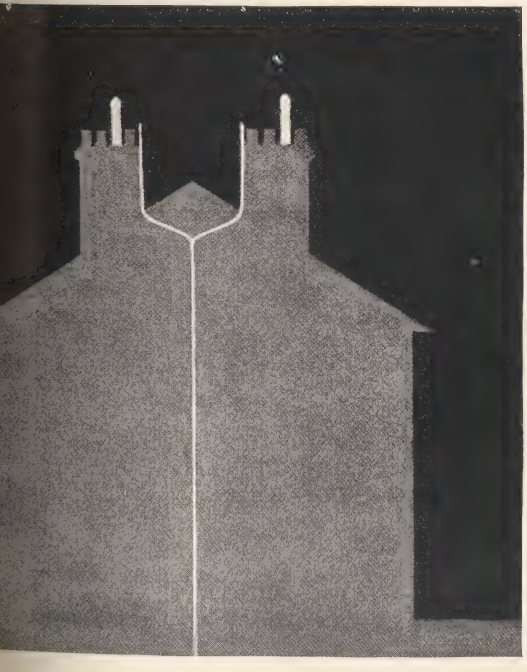


Fig. 3.—House at Hampstead.

owls on chimneys not connected to conductors.

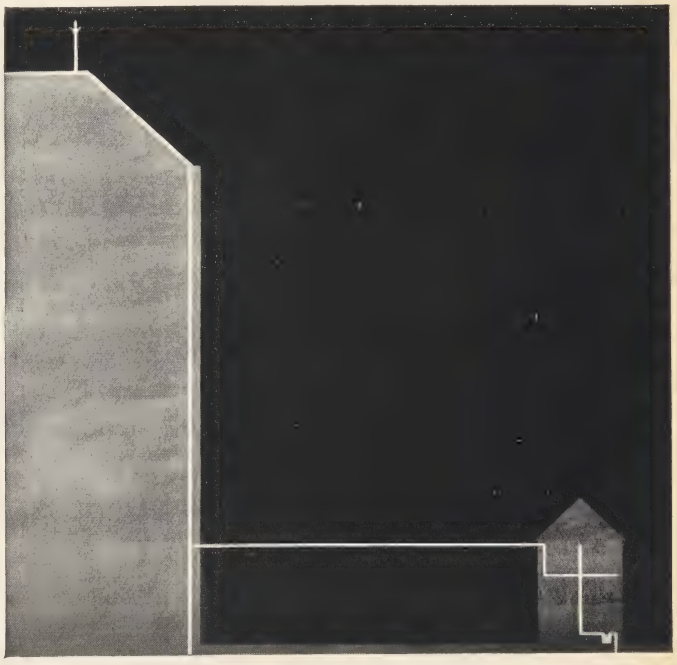


Fig. 4.—Corporation Granary, Bristol.

Telephone wire passing close to lightning conductor and across gas pipe in small wood lined building.

Examples of Complication of Metal.

lightning conductor upon it; ignored even the north gable close to which it was supposed to have passed, that had lead flashing down both sides which, in conjunction with the rain gutters and pipes formed lines of metal almost to the ground; it ignored these because it preferred a path of infinitely greater resistance through the air, to curl in through a window about 20 or 30 ft. from the ground, being "attracted," I suppose, by some organ pipes! Yet it was considered sufficiently satisfactory for the Lightning Research Committee to accept and print in its records.

My investigations showed that the vane on the spire had been struck. A lightning conductor was connected to the vane rod and carried down inside the spire, then out through one of the windows, down the tower, and it ended in a rain pipe in the corner, so there was no actual earth connection. The rain pipe touched the lead flashing that passed up, round the back of the tower, and down the other side where there was another rain pipe. Close to this was a gas lamp, set to light the passage; the gas pipe passed through the wall into the nave and along to the meter which was in a cupboard under some wooden stairs at the north end. So, there were two paths of metal, one, the lightning conductor continued by the rain pipe, with a bad earth connection; the other, the lightning conductor continued by the lead flashing, rain pipe and gas pipe, through the meter to the good earth connection afforded by the gas main in the road; and the lightning that struck the vane took the path of least resistance. That a fire was caused at the meter and that the flames should have spread up the wooden staircase to the organ loft, burnt the organ and melted the leaded lights of the window was, I think, a natural consequence.

It might be asked "how is it possible to protect this building since, however perfect the conductor in that corner, there is always open an alternative path to an earth connection at least as perfect as that of the conductor?" If we were to put two conductors, or even a dozen, on the spire the same thing would happen. Protection is a much more simple matter than that. Run the conductor down the south-west corner of the tower and it would be sufficiently far removed from these dangerous complications.

The obelisk I have been explaining is the simplest possible case. If all structures were as simple as that, protection from lightning would be so ridiculously easy that a schoolboy could, by means of a few set rules, learn to protect them efficiently. The sort of problem one is sometimes confronted with is more like this:—metal cowls on chimneys, lead covered ridges and flashings, iron girders, stoves and casements, rain pipes and gutters, gas and water service pipes, etc., altogether presenting a problem that would require very careful studying. This is just the difficulty that protection from lightning presents. Some structures are easy to protect; some are already partially protected by the metals about them forming accidental conductors; but others are very complicated and require careful consideration and especial precautions.

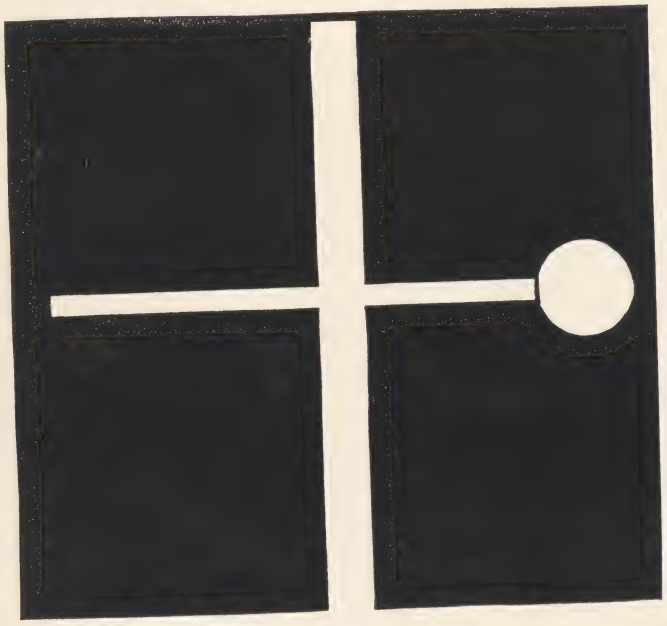
Ships, though they do not interest you professionally, form a useful object lesson. In the days when our Navy was composed of wooden ships, it suffered an enormous amount of damage by lightning. Snow Harris induced the Admiralty to adopt proper lightning conductor systems and the damage ceased. Then came the ironclads with steel masts, and the lightning conductors were discontinued for the ships were veritable floating lightning conductors in themselves.

Metal is being used more and more in the construction of buildings and the day may come when, like ironclads, they will be all metal and require no extra conductors, (though in the interests of art we may perhaps be permitted to hope that this day is very far off) but in the meantime they are being unintentionally rendered more difficult to protect efficiently. For there are other effects to be considered than the mere conduction of the charge to earth.

It is safe to say that most persons, whether they regard lightning as some form of bolt in the old-fashioned way or from the point of view I have placed before you, as a fracture of the air, think that the main discharge or flash is all that has to be considered; that it would strike a building and shatter it, or a lightning conductor and go quietly to the earth, and all would be over; but electricity possesses a property that is akin to inertia in matter and there are consequent effects to be considered.

Although it is not entirely satisfactory, I will use a water analogy to illustrate this. Suppose this diagram to represent the plan of a system of canals. Here is the main canal, open to the sea, and equivalent to a lightning conductor with a good earth connection. To left and right are branch canals, equal to branch lines of metal from the conductor, one of which has only a weak wall dividing it from a pool of water, all the other banks being sufficiently high and strong to withstand any effects due to the rise or fall of the water level. The pool represents a mass of metal near the far end of the branch conductor but not connected to it. If the level of the water at the head of the main canal were suddenly raised enormously, there would be a rush along the canal due to the passage of the extra head of water to the sea, but the water in the branch canals would not remain at normal sea level; there would be a surging effect along them. In the left hand canal there would be no effect beyond the rise and fall of water; but in the right hand one the dividing wall at the end, being very weak, might be broken down. The strength of the wall represents the insulating strength—or, in other words, the distance—between the branch conductor and the adjacent metal and would determine whether a breakdown, or spark, occurred between the two.

In an actual case that occurred about ten or twelve years ago, lightning was said to have struck down inside a brick chimney stack on the roof of a small corrugated iron building situated close to Happisburgh Lighthouse, in Norfolk. According



PLAN OF CANAL WITH TWO BRANCHES,
one being separated from adjacent pool by a weak wall.

to the report it did not damage the chimney, or even avail itself of the large amount of conducting material afforded by the metal covering of the building to get to earth ; it preferred to strike down the centre of the flue and then, in some unexplained way, got to a gas pipe and caused a fire by lighting the gas !

Like many other reports that have led lightning to be regarded as guilty of freaks and vagaries—and to emphasise which I have given the published descriptions before reproducing the cases as they actually occurred—this account failed to get at the root of the matter ; so let us look into it from the aspect I illustrated by the canal analogy. The upper part of the lighthouse, called the lantern, was composed of metal and a lightning conductor was connected to this and carried down inside the lighthouse, being connected to all the metals in the interior ; at the bottom it passed out to an ordinary copper plate earth connection. The gas-making house was near and a pipe from this passed underground to the lighthouse and up to the top to provide gas for the lantern and this pipe was, of course, in connection with the lightning conductor. A branch pipe from the first one passed underground to provide light for the small building which was used at the time as men's quarters.

There was therefore a line of metal connected to the lightning conductor at the top and carried along underground into the small building but not connected to its iron framework, there being a small gap between the two and, owing to the surging effect I have described, when the lighthouse was struck the discharge would pass to earth by the conductor and there would be no damage to the lighthouse, but a spark would occur at the end of the branch line of metal, lighting the gas. This fire could have been prevented by connecting the gas pipe, where it entered the building, with the metal covering, or else the gas pipe to the framework at the gap.

A somewhat similar case, except that there was no lightning conductor but only metals that formed accidental conductors, occurred at a North of England hotel. Lightning struck a chimney stack under which, on the upper floor, was a temporary or extra kitchen with cooking ranges on two sides, one having an ordinary brick flue and the other a metal flue pipe that passed out through the wall and up above the eaves' level. It was said the lightning, having demolished the chimney stack, passed down the flue into the kitchen, dashed across at the man cook, giving him a shock and hurling a saucepan out of his hand ; then it escaped through a window that fortunately happened to be open at the time !

On investigating the case I found that the ridges were covered with lead connected to the rain gutters and pipes that formed lines of metal to the ground and the lightning followed these lines. But the metal flue pipe was also connected to the rain gutter by metal supports and the cook at the time was poking the fire, having a poker in one hand and the saucepan in the other, so there was a branch line, or chain, of metal consisting of the flue pipe, stove, poker and saucepan with the body

of the unhappy cook as a connecting link, and there would be a surging effect along this chain and the cook felt it and jumped, very naturally dropping the saucepan. There was no effect beyond the saucepan because the chain ended there. The effect in this case was very slight though it naturally startled the cook.

Having considered what occurs when lightning strikes a system of metal, we may go a step further and consider what occurs when it reaches the earth (to put it in popular language) and I will use a water analogy again. If we were to disturb the water in a pond by dropping a stone into it, or in any other way lowered the level of its surface momentarily at one point, waves would be set flying outwards from the point struck; and the sudden change of electrical intensity, or potential as it is technically called, caused by a lightning discharge gives rise to a surging effect through the earth that is somewhat similar to the waves on the pond.

We can often trace this effect at one end of the stress, the cloud, by side discharges that have the appearance of fiery serpents wriggling about on its under surface, and we can sometimes trace it at the other end of the stress, the earth, where the conditions have happened to be favourable to showing those effects. Those conditions would be two metals one or both connected to the ground, but not to one another and having only a small gap between; or one metal connected to the ground by some medium that could feel or in some way show the effect. A man walking with a gun on his shoulder, when a flash occurred in his vicinity, would not only feel the effect but would show it admirably for he would jump or fall down. A church spire might be struck, with or without a lightning conductor upon it, and persons in a neighbouring house, who happened to have metals in their hands at the moment, might feel slight shocks. Workmen handling metal tools are especially liable to these effects. They are not as a rule severe but conditions may occur in a building that would cause a fire so they have to be guarded against. What it means is that lightning may strike one spot and a fire break out as a consequence somewhere within a radius of half a mile. I have never been able to trace these effects beyond that distance.

I have selected the following case not only because it is one of the greatest distances but because, from seeing the marks where a slight fire had occurred, I was able to deduce the circumstances I am bringing before you.

When at Heathfield Station, in Sussex, one day, I noticed marks of burning and a combination of metals that led me to think I had accidentally come across an interesting case, so I examined the buildings carefully. The railway here runs through a cutting over which the public road passes by a roadbridge. The booking office is on a level with the road, and from this a footbridge, roofed with corrugated iron, leads across the line, to give access to the opposite platform. A gas pipe from the main in the road passes into the footbridge and up to a gas bracket set a few feet below the iron roof and telegraph wires pass to the corner of the booking office,

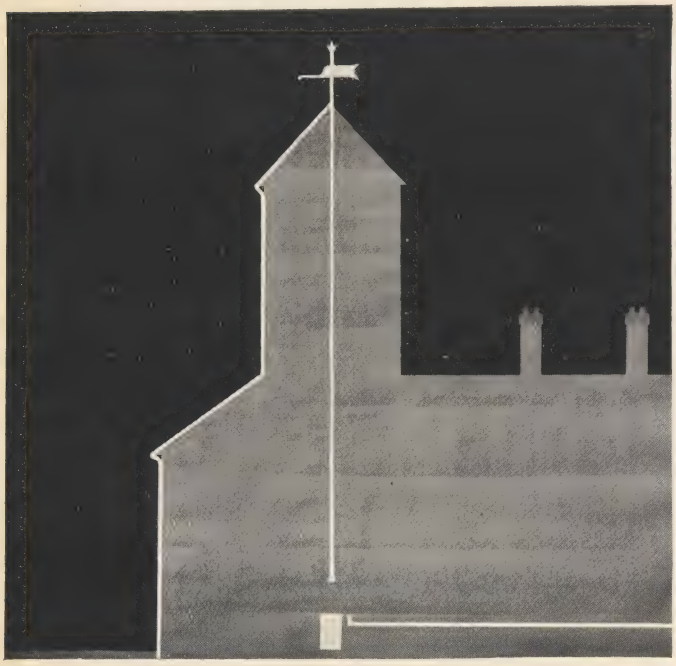


Fig. 5.—A Sussex Mansion.
Steel rods of wind indicator carried from vane into hall. Iron door on floor below with water pipes almost touching.

Fig. 6.—East Tower at Westminster Cath
Lead flashing between brick piers. Iron staircase in canopy roofed with lead.

Fig. 7.—Lady Chapel, Gloucester Cathedral.
Conductors passing over lead roof to earth. Radiator touching gas pipe and metal flue pipe passing up and in contact with lead roof.

Fig. 8.—Type of Ordinary Large Ha
Gas pipe carried along under ridge

Examples of Complication of Metal.

then downward past the iron roof and the gas pipe, forming almost a connection between the two, and then on to the instruments in the office. The rubber covering of these wires had been ignited close to the gas pipe and the flames had charred the adjacent woodwork.

I came to the conclusion that lightning had not struck the station although enquiries elicited the fact that the fire had occurred during a thunderstorm. A signalman walking along the line towards the station said he did not see lightning strike there although he was looking that way and saw the fire occur. I indicated two directions in one of which I thought it probable that some object within about half a mile had been struck at the time of the occurrence and was told that a house, just about half a mile away and in one of the two directions I had indicated, had been struck and, it was believed, at precisely the same time.

When lightning struck the house waves of electrical potential were propagated in all directions, but those in the direction of the station would be concentrated, more or less, along the gas main and pipe leading up to the footbridge so its potential would be raised, but that of the metal roof, which was insulated on a wooden frame, would remain normal. Thus a momentary stress would occur between the two through the telegraph wires, and this resulted in a spark that caused the fire.

Efficient protection from lightning is neither the impossibility that some seem to think nor the very simple matter that others would have it appear. It is one that presents many difficulties but these can be overcome. It consists of more than the mere putting up of lightning conductors; connections of little cost and perhaps seemingly trivial, made across dangerous gaps, make just the difference between efficiency and non-efficiency. What we require to do is to bring knowledge to bear on the subject as well as a careful consideration of the problem that the building to be protected may happen to present.

The time at my disposal has necessitated my keeping to main principles and prevented my going into practical details but this is, I think, not to be regretted for the main principles are, after all, the important matter. If these are rightly adhered to, what are commonly called practical details may be wrong yet very little harm result; but if the practical details are perfect and the main principles have been ignored very serious results may follow.

I may, however, in conclusion say a few words as to the metal for a conductor system. It takes very little to conduct a lightning flash and high conductivity, or great conducting power is of small importance in this connection. All metals are conductors, the difference in conductivity between one metal and another being small in comparison with that between conductors and non-conductors. So long as it is of sufficient size not to be melted—and the fusing power of lightning has been, I consider, very much over-rated—it might be of any metal; but we have to take

durability into account. Lightning conductors are expected to last a very long time, for owners of property do not want the expense of renewing them from time to time. We therefore use copper almost exclusively in this country, and it is what is called high conductivity, or electrolytic, copper, not for the sake of the small extra conductivity but because the purer the copper the longer it will last. Impurities in metal mean decay. Iron has been suggested as an alternative to copper, but it is too perishable in this climate and if made of a sufficiently large size to be really lasting it would render protection from lightning rather an expensive luxury.

(The blocks illustrating Figs. 1 *to* 8 *are lent by the courtesy of the Editor of "The Royal Engineers' Journal.")*

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The Organ Architecturally Considered.

Mr. George Ashdown Audsley, LL.D., architect, in an article in *The Inland Architect and News Record*, says a church organ should be more or less powerful in tone in exact proportion to the internal dimensions and the acoustical properties of the building in which it stands, and the more or less favourable position it occupies therein ; power, being, in this case, understood to be volume and pervading character of tone rather than loudness, in an ordinary sense, which is usually accompanied by unmusical harshness. A harshly voiced and noisy organ is an unmitigated abomination to the refined and musical ear. The leading characteristic of a church organ should be grandeur combined with the greatest possible refinement of intonation ; so that it may be perfectly adapted for the appropriate accompaniment of choral and congregational singing, and the rendition of incidental music of a solemn and dignified character. It must never be forgotten that such an organ is essentially, and above all, an accompanimental instrument ; its capabilities for the display of florid skill in secular music on the part of the organist being of secondary consideration if it is a consideration at all. How often, however, do we find on testing the tonal appointments of modern church organs, or analyzing their lists of stops, that true grandeur and usefulness have been sacrificed for the insertion of several ear-tickling and imitative stops, for which so many organists have an inordinate predilection ; or by the insertion of too many small and cheap stops, which find favour among competitive organ builders. An organist's or an organ builder's specification can generally be detected by the appearance of such fancy stops, or the inordinate introduction of insignificant ones, which go so far to denude the church organ of its all-important accompanimental character. In the case of small, or even medium sized, instruments such treatments are to be condemned ; but in large organs there is usually ample material for both accompanimental and solo playing.

The Qualifications of an Organ Architect.

Would it not be well for the professedly church architect to be also an organ architect, that he could control the construction and tonal appointment of the organ, just as he controls the construction and appointment of the church in which it is to be placed. We have said elsewhere, and in these columns it is proper that we repeat our words : " Let there be organ architects, just as there are architects devoted to the study and practice of civil architecture ; men properly qualified to undertake such duties as the giving of sound and reliable advice respecting the proper position and provision for the organ in a church or other building, regarding its

dimensions and tonal character, and with reference to its general treatment and design. Such men should be generally conversant with architecture and the science of acoustics, have a musical taste and training, and be experts in the theory and practice of organ construction, Let such men be honorable and above suspicion, and let them be both able and willing to fulfill their duties to their clients in the matter of organ building, just as architects of reputation are in the larger matter of church building. When such experts are forthcoming, and are entrusted, in a businesslike manner, with the scheming, designing, and superintending the construction of organs, a new era will commence in the art of church organ building. Both in Germany and France the construction of a church organ is a matter of great importance, and is usually attended to by a properly appointed commission of musicians and experts. In the procural of the grand organ for the Cathedral of Notre-Dame, at Paris, the commission appointed was of a most distinguished and remarkable character."

The Organ in Relation to Planning.

When an architect who is not conversant with organ matters is intrusted with the designing of a church, he would do well to consult, before completing his plans, a competent and disinterested organ builder or expert, so that everything that is possible may be provided for the reception of an organ of adequate size in a suitable position ; and where floor space is very limited, that provision may be made for the reception of the main bellows and blowing mechanism as close to the organ as practicable. As blowing mechanism is generally more or less noisy, it is advisable to locate it as far as can be found convenient from the organ proper, so that its sound may not be audible in the church. It is only necessary that the place in which it is installed has such communication with the interior of the church as to secure a supply of air to the feeders of the same temperature as that which surrounds the pipe work of the organ ; otherwise it will be practically impossible to keep the instrument in tune.

We trust that the preceding remarks will have the desirable effect of impressing the architect interested in church building with the importance of making himself acquainted with both scientific and practical matters connected with the organ. With the materials furnished by the several published treatises on organ construction and appointment, he can readily acquire sufficient elementary knowledge to prevent him from making at least serious mistakes in locating and planning sufficient accommodation for the organ in churches designed by him.

Correspondence.

To the Editor of "The Journal."

The L.C.C. and "Death Traps."

DEAR SIR,—When I pick up my newspaper and see such nerve destroying head-lines as "Terrifying Scenes at a Fire," "Leaps for Life," "Children Burned to Death," and so on, my memory recalls an Act of Parliament which came into force in 1906 for the express purpose of preventing such terrible calamities, I am therefore curious to know whether the house at Derby Street, Kingsland Road, Dalston, which was completely destroyed by fire in less than half an hour on Saturday the 11th of April last was one of those buildings which come within the Act, or whether it was another of those examples which the Act has missed. Several persons were burned to death in this fire and had it not been for the personal heroism of one man, the loss of life would have been considerably greater.

I have not had the opportunity of measuring the building, but it looks somewhere about 30 ft. in height—the Act says that a building must be a fraction *over* 30 *ft.*, if it is *exactly* 30 *ft.* (or less) it is exempt, it seems perfectly absurd that it should be so but that is what the Act stipulates. The point I wish to emphasise is, that those who were consumed in Saturday's fire might and undoubtedly would have been alive to-day if the house had been fitted with one of those inexpensive, but effective "Bafeco" Roof-Escapes.

At Barnsbury, only a few weeks ago there was another painful illustration of a fatal fire, there was no roof-escape, the fire started at the bottom of the house and the occupants in the upper stories found their retreat cut off—with the result that several lives were lost. The house was less than 30 ft. in height from the pavement and consequently was exempt from the Act.

The District Surveyor is usually acquainted with the danger spots in his district, but cannot interfere where the buildings do not exceed 30 ft. in height. The public without waiting to make proper enquiries are ever ready to attach the blame to officials whose duty is to administer the Act. It is difficult to understand why this 30 ft. limit was fixed as it fails to include a large number of buildings which it is (judging by numerous fatal fires) most necessary to protect. The height limit should be 25 ft. instead of 30.

The intention of Section 12 of the Amendment Act was (*inter alia*) to protect those whose circumstances compel them to live in houses with a number of other occupants and whose risk of disaster by fire is consequently increased. It is a most excellent Act as far as it goes but it does not go far enough—the recent fires have proved beyond argument that the legal assumption that the person living in a house 30 ft. in height is safe, whilst another living in one *just an inch higher* is in danger, is quite wrong.

It cannot be denied that houses let out in tenements have a greater fire risk and consequent danger to the community than the ordinary private residence occupied by one family and as it must be in the best interests of humanity to help those who cannot help themselves let common-sense intervene and legislation be introduced to meet the demands.

I am strongly of opinion that Section 12 should include all houses occupied by two or more families which exceed 25 ft. in height—this would mean that all three-storey buildings which are let out in rooms or tenements would be legislated for.

My reason for fixing 25 ft. is, that it would be difficult to get three storeys in less than 25 ft., when the other Sections of the Building Act as well as the Public Health Act dealing with habitable rooms, etc., are taken into consideration. Two storey houses would of course be excluded,

but there is not so much danger in that class of house because, even if let to several families we might reasonably expect in extreme cases they would all be able to escape through the windows without very serious risk of injury, as the height from the ground would not be great.

I am not an alarmist but cannot shut my eyes to the statistics prepared by the Fire Brigade and other departments of the London County Council relating to loss of life in buildings not fitted with "means of escape." The matter is I think sufficiently serious to justify a request for better protection—more especially when effective and inexpensive means are available.

While on this subject of Escape from Fire I might refer to another class of building which would be all the better if equipped with an "alternative means of escape," I mean private residences which are occupied by well to do people in the West End and other parts of London where a number of domestic servants are employed and who invariably sleep in the upper part of the house—it is sometime since a fatality occurred in a residence of this character yet the danger is there and we must not shrink from contemplating the terrible result to the unfortunate people whose escape would be cut off in case of a fire breaking out in the lower parts of the house. An escape to the roof is the most effective outlet I can imagine—once on the roof and safety is assured in a few steps by passing on to the roof of the adjoining house where the fire escape can effect a speedy release—devoid of danger to rescued and rescuer alike.

The chances of burglary are not increased—the modern inventive faculty has provided for that, the "Bafeco" apparatus I have before mentioned, not only automatically opens the trap door from within but also automatically locks itself when closed thereby becoming an effective bar to the unwelcome visitor who may seek entrance that way.

The Burglary Insurance Companies viewed with some alarm the trap door legislation when first introduced but to my personal knowledge they have expressed their entire approval to the above-mentioned system of locking.

The more I think of it the more I am convinced that it only needs to become better known to be more generally adopted and every intelligent citizen will see that he not only protects his own life, but those nearest and dearest to him as well as those in his employ, by having his house fitted with an escape to the roof.

There is another point in favour of its adoption, for hygienic reasons alone it is to be strongly recommended. The opening and closing of a "Bafeco" trap-door is so simple that the youngest child can operate it with ease. There is only a handle to pull, the mechanism does the rest. When the trap-door is open the stair-case becomes efficiently ventilated by the "natural system." There are very few staircases that can claim to be properly ventilated. Every time the street door opens, fresh air enters and ascends driving the heated or vitiated air before it, but, having no escape at the top, all that is bad remains in the upper part of the house for the benefit of those who sleep there; this evil can be changed by the introduction of a trap-door made to open automatically thus providing not only a vast improvement in the house ventilation, but a certain means of escape in case of fire.

I speak from experience on this subject having fitted several of these Fire Escapes in the West End of London and in each case they have answered admirably and what is of equal importance they are very reasonable in price.

Apologising for trespassing so much on your space,

I am, yours faithfully,

101, Masons Hill, Bromley, Kent.
April 16th, 1908.

PERCY A. COAD (Member).

Mr. Hands' Lecture.

Dear Sir,—The Committees and the Council of the Society are to be congratulated on the most interesting and instructive lectures which have been recently delivered to our Society and the thanks of every member are due to them for the influence they have been able to exercise in order to get such well-known lecturers to address the meetings.

It is a great pity that comparatively so few members attend these lectures, they miss a good deal of valuable and extremely interesting information while at the same time it is very discouraging to the Lecturers who never know until they see the members arrive whether the lecturer will have to face a crowded or an empty house; every member who resides within a reasonable distance ought to support the Society by attending at least some of the lectures—I don't suppose for a moment their absence is due to any inflated idea of their own superior knowledge—I would rather put it down to forgetfulness and the possible consolation that they will be able to read it in the Journal without the exertion of journeying up to Staple Inn, but I can here say that reading the report and listening to the actual lecture are vastly different especially when you have such a brilliant lecturer as Mr. Hands. There was no reading of notes by that gentleman and I think I am correct in saying that his lecture was almost word perfect with what is printed, with, I may add, valuable additions.

We are promised another high-class lecture when Mr. Rimington addresses the meeting on May 21st, and I hope we shall have a very large attendance, it will otherwise be a very poor compliment to such a well-known lecturer. I believe there are several members who have never been inside the Society's premises, I make a special appeal to them to come to the next lecture. They will be made most welcome and probably they will afterwards attend as frequently as their other engagements will allow. We should have had a very poor muster indeed for Mr. Hands, had it not been for our distinguished visitors and unless the members attend these lectures better in the future, if will eventually result in first-class lecturers declining to waste their time when so few attend to listen to what they have to say. I trust this hint will be taken by the members and that there will be no need to again refer to the matter.

I think Mr. Marsland's remark "that the simple yet masterful way that theory and practice was expounded by Mr. Hands was a treat even to those who flattered themselves they knew quite a lot about the subject," was very appropriate.

To my mind the reproduction of lightning on a small scale and the practical illustration by means of models of the various kinds of damage done by the destroying element was of absorbing interest and most convincing and would scarcely be credited by anyone unfamiliar with the subject; such practical demonstrations dismiss any sceptical views one might previously have held on several of the problems exhibited, I refer to one in particular where a fire at a railway station was caused through a building struck by lightning "half a mile away," it was no doubt an extraordinary occurrence, but there was no question about it as all the conditions were clearly reproduced by the "models."

One of Mr. Hands' concluding remarks has no doubt set more than one architect thinking. During his lecture he showed us among many other things what to avoid when protecting our buildings from lightning and stated that provided due regard was paid to the points he had emphasised, the cost of protection should be quite a small matter, and then he went on to say that he had ideas relative to the subject which were of a very advanced type and almost revolutionary in character and consequently would be opposed by those who accepted the general principles and orthodox methods of this age: he said he was quite satisfied his ideas were right but he was not prepared to say more at the present time as it would lead to a deal of controversy.

I did not take a note of Mr. Hands' remarks at the time but the above is the effect they had upon me.

Of course I have not the faintest notion of what Mr. Hands' revolutionary ideas are, but apart from those remarks, my thoughts have wandered somewhat as follows :—

Mr. A. is an architect who protects his building from lightning in the most approved and scientific manner and hands it over to his client who in course of time forgets all about lightning protection (he may be a manufacturer and absorbed in his business) and makes some alterations in his gas or water services assisted possibly by the proverbial "plumber."

The architect's masterpiece is immediately in danger of being sacrificed at one fell swoop, all the skill and energy he has displayed on behalf of possibly a highly nervous client is undone, quite innocently of course. Mr. Hands illustrated during his lecture what happened when an unfortunate gas pipe happened to touch something else in the building.

Take the same architect, same building, same everything but no alteration of gas or other pipes and no "plumber," but a genius of another type puts up a building within half a mile who knows very little about "protection from lightning," and innocently enough in his ignorance brings about a set of conditions which destroys the "careful man's building" half a mile away. What is the moral, have no lightning conductors and trust to luck ?

Does Mr. Hands mean anything like that by his revolutionary ideas or does he hint at some master stroke of the genius ? Can he harness and control the destructive force in such a way as to bring about self destroyal ? It would not surprise me if Mr. Hands could do that, he appears to be master of the subject. I should not be startled to learn that he had introduced something to attract and receive the lightning and either make it automatically destroy itself or harness it for some good purpose, say by transforming it and putting it into storage so that it could be switched on at will to facilitate the cooking without frightening the cook ; or it would be rare sport to connect it to the garden gate and give the tramps a shock.

At the present time I am somewhat confused about the matter (with which admission possibly some of my readers will agree), nevertheless I was intensely interested and am thirsting for further information.

4, Southampton Row, W.C.
April 16th, 1908.

Yours faithfully,
Edwin J. Sadgrove (Member).

Royal Masonic Institution for Boys.

There is sent out with this issue of the *Journal* a letter from Mr. Albert E. Pridmore, Past President, and W.M. of The Society of Architects Lodge, who is going up as a Steward to represent the Lodge at the 110th Anniversary, to be held on June 17th, 1908, under the Presidency of the Right Hon. The Lord Llangattock, R.W. Pro. Grand Master for South Wales (E Div.).

The object of Mr. Pridmore's appeal is sufficiently set out in his letter, and does not need reiteration, but we desire to call attention to the fact that it is addressed not only to Masons but to other members of the Society and their friends, including ladies and minors. It is confidently hoped that these, as well as the members of the Craft, will make a generous response.

General View of Wash-Mills, illustrating the machinery used for the intimate mixture of the chalk and clay.

General View of Rotary Kiln Plant, with slurry mixers and storage tanks in foreground.

The Manufacture of Portland Cement.

A large number of members participated in the visit of the Society to the J. Bazley White and Bros.' Swanscombe Works of the Associated Portland Cement Manufacturers (1900) Ltd., on March 28th. On arrival at Northfleet, the party proceeded to the Factory Hall, the property of the A.P.C.M., where they were most hospitably entertained to luncheon. The chair was occupied by Mr. F. A. White who was supported by a number of directors and officials of the Company, and who expressed the pleasure which it gave them to welcome architects to their works,

Mr. G. A. T. Middleton, A.R.I.B.A., Vice-President, in proposing a vote of thanks to the Directors, expressed regret at the absence of the President, Mr. R. F. Vallance. F.R.I.B.A., through serious illness.

During luncheon an organ recital was given by Mr. Horace Shirley, A.R.C.O., on the fine instrument recently presented by Mr. Robert Bevan, son of the founder of the firm of Knight, Bevan & Sturge.

The visitors then proceeded by special tram car to the works, where they were divided up into eight or nine parties each under a guide. By this means individual information was assured and time economised.

The party had been able to see from the railway the quarrying of the chalk on the properties of the Company adjoining the cement works, and the first department visited was the cask manufactory. These casks are made by special machinery, many of the machines being of a special character patented by the Company, and capable of turning out upwards of three million barrels a year, chiefly for the export trade.

All the processes in the manufacture of Portland Cement were then inspected; the washmills for the amalgamation of the chalk and clay were first seen together with the new Oëchelhauser Gas Engine Plant driving this and other departments on the works; then came the large slurry mixing and storage tanks, followed by a detailed inspection of the whole of the Rotary Kiln Plant.

The visitors then proceeded through some of the grinding mills, to the extensive warehouses, bringing the tour to an end with an inspection of the Mason Gas Producer and finally obtaining a comprehensive bird's-eye view of the works and the surrounding country, when passing up Galley Hill to the cars for the return journey to Northfleet.

On returning to the Factory Hall, tea was provided, and Col. Willan, who presided in the absence of Mr. F. A. White, cordially welcomed the visitors.

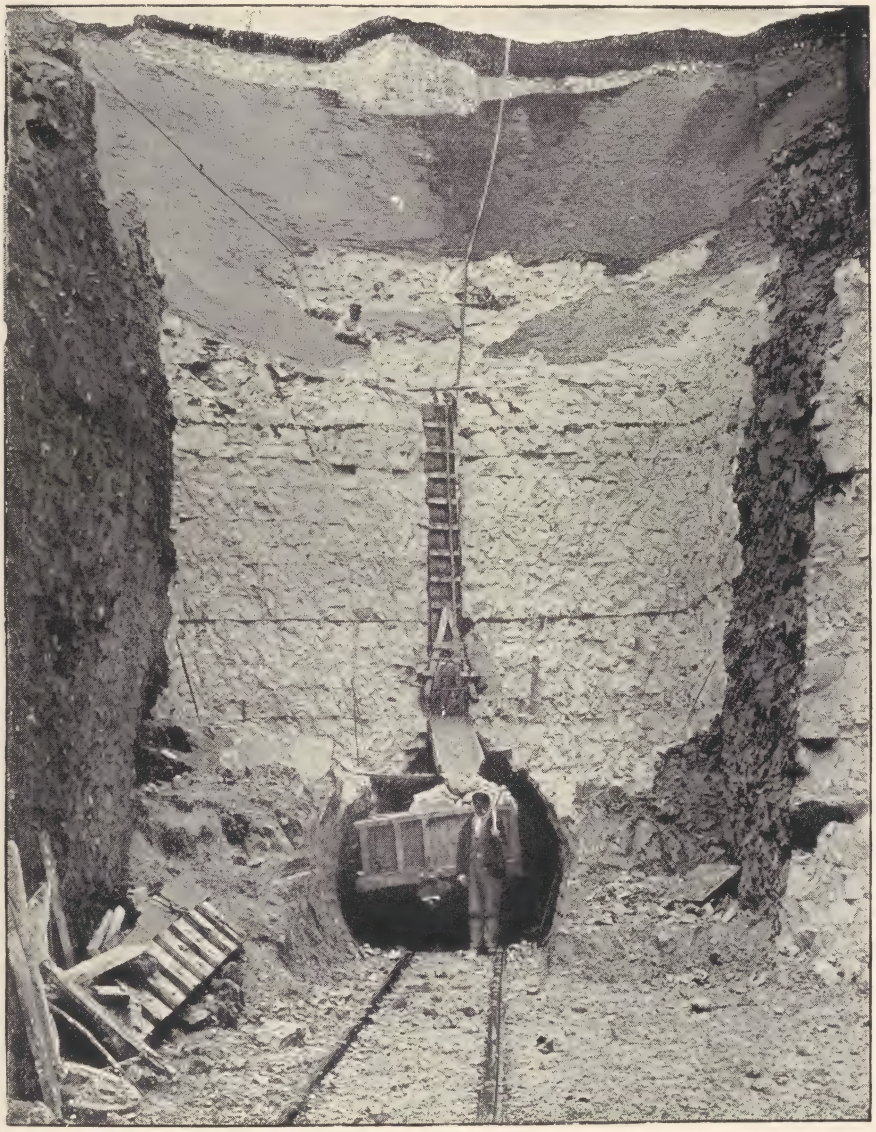
A most interesting and valuable visit was brought to a close with a demonstration by experts, of the gauging and testing of Portland Cement, and an exhibition of testing apparatus of every description, which was much appreciated. The illustrations shewing the methods of obtaining, amalgamating and calcining the raw materials are reproduced from blocks lent by courtesy of the Company.

Architecture for Women.

Mr. R. Weir Schultz, speaking at a conference on "Employment for Women," held at the Caxton Hall, Westminster, last month, said he saw no insuperable obstacle against women who had gone through a thorough course of training becoming competent and capable architects, but advised those to take up the work who were really determined to go through with it seriously, who understood all its difficulties, who had sound health and an infinite capacity for work, who were full of energy, and had friends and influence to enable them to get practical architectural work out on their own account. Before women architects were likely to be employed to any extent they would have to overcome many difficulties, allay many prejudices, and gain the confidence of the public. He was afraid they would find a good deal of prejudice in the ranks of the architectural profession itself—not only among practising architects, many of whom considered that architecture did not come within the legitimate sphere of women's work, but also amongst the rank and file of assistants, who saw the possibility of less employment and of reduced wages, for it was quite true that there was much of the routine of an architect's office that might be better done by women than men. Then, with regard to the practical superintendence of works: it would be an uphill task to convince both client and builders, and their workmen, that women were as likely to be as competent as men to direct the practical details of the construction of buildings.

How Women may Qualify.

With regard to the opportunities open to women for acquiring the necessary training, there were two main courses open. One was to enter an architect's office as an articled pupil, many architects being willing to receive women as pupils, and, indeed, several had already done so. Two women, articled many years ago to an eminent architect, now deceased, and who showed great talent for internal decorative work and had a good sense of colour, had had quite a successful career as decorators of houses, designers of interior panellings, chimney-pieces, and patterns of textiles. More recently two other women, who were articled to an eminent architect, passed the examination of the R.I.B.A., and were admitted members of that body. One of these ladies carried off in 1905, from amongst fourteen competitors, the Silver Medal of the Institute for the best essay, the subject being "The Development of Architectural Art from Structural Requirements and Nature of Materials," a very practical subject. Another woman, also articled to a well-known architect, applied for admission to the schools of the Royal Academy, and her probationary work was, he was informed, the best ever sent in by a student. The second method open to women was to attend the course of study available at various schools and colleges, for at most of the places where training is given in architecture itself and in



Chalk "Mill" in Quarry, showing the method of digging the Chalk in the Pit.

the arts and crafts relating to architecture, women are admitted as students on the same conditions as men. There is, however, one exception—the Architectural Association had so far declined to admit women, either as members or as students; or to allow women from other schools to draw in their museum of architectural casts. Two years ago a woman applied for admission as a student, but was declined. At the Royal College of Art, South Kensington, there is a school of architecture open to women. They are also admitted as students at University College and King's College. The latter, through its Women's Branch in Kensington-Square, is taking up a strong position in connection with the training of women for definite careers, and architecture is one of the subjects in the curriculum. The schools of the Royal Academy of Arts are open to women, both in painting, sculpture, and architecture. In fact, in the first-named section women, he understood, now formed the majority of the students, and at a recent election of students all the candidates admitted were women. They won a great number of the prizes, perhaps averaging half of the whole in the painting school, and at least on two occasions women carried off the gold medal and travelling studentship in painting. He was not aware that at present there were any women students in the school of architecture.

An Overcrowded Profession.

In conclusion, Mr. Schultz pointed out that the profession of architecture, like all professions, is very much overstocked. At the present time there are many trained young men in London alone seeking for engagements in architects' offices, and ready to take whatever offers, at a bare subsistence wage. No woman ought to take up architecture unless she could afford to go through the long and expensive training necessary, and unless she had reasonable prospects of getting good employment or of being able to get together a practice of her own eventually.

Publications of Scientific and Learned Societies.

Deputation to the Postmaster General, on Postal Rates.

For some time it has been felt that the publications issued by professional societies should be put on the same footing as registered newspapers, and last year a Committee was formed composed of representatives of the societies interested, The Society of Architects being one of them, to deal with the matter.

The matter was eventually left in the hands of the British Science Guild which recently arranged a deputation to the Postmaster General on the subject.

The deputation was introduced by Mr. Verney, M.P., and placed their views before Mr. Buxton, M.P., who in his reply pointed out that the newspaper post was already run at a loss and in addition the difficulties of giving preferential treatment were so great as to be practically insurmountable. He held out no hope of being able to meet the views of the deputation.

Lighting from the Architect's Point of View.

MR. G. A. T. MIDDLETON, A.R.I.B.A., Vice-President, in an article in *The Illuminating Engineer*, says it is unquestionable that a period of exceedingly brilliant illumination of the interiors of buildings is with us now, and is certain to remain, beside which no previous period in the world's history is comparable. The architect, whose art is historical, dating back to the earliest times, and whose modern work is based upon tradition thus handed down to him, is consequently bound to reconsider his position in designing his interiors.

On the other hand, he claims that the illuminating engineer should respect the traditions of his craft, and, while providing the degree of light which modern requirements demand, that he should do this in such a way as not to interfere with systems of enrichment which have become stereotyped. Both architect and engineer are right, and consequently there must be a certain amount of give and take between them. Speaking generally, the architect demands that light should be diffused rather than concentrated, so that there may be no harsh and unnecessary shadows where they are not desired. This demand is unquestionably due to tradition, for, from the earliest ages onwards, the lighting of interiors has hitherto been dim, and their decoration has been evolved upon this basis. Traditional forms of decoration are slow to change, and consequently it is reasonable to expect the architect of the present day, when confronted by an entirely new condition of affairs, to ask that he shall be let down gently, and allowed plenty of time in which to conform to the new state of things.

The Lighting of Old Buildings.

The architect learns his business by studying the old, the engineer his by studying the new, and the two professions are thus in sharp conflict; but when the problem is that of lighting an old building, the new must surely give place to the old. Most old buildings in England are of the character of churches, erected in the great Norman and Gothic times lying between the Conquest and the Reformation.

The buildings of those days were, internally, at any rate, designed with little idea of brilliant illumination. Certainly, towards the latter period, a great deal of light entered in the daytime through the large windows, but these were intended for the display of stained glass rather than for the admission of daylight. The general internal effect was sombre, and it was deliberately so, and this in spite of the fact that night-time services were frequently held, for which the only illumination consisted in a few candles near the altar, the effect of which was but to intensify the gloom. Yet how beautiful the result must have been can well be comprehended by anyone who has attended a twilight or night service in a great continental cathedral such as that of Cologne, where a silent congregation stands in the huge nave listening to, though not taking part in, the music and the prayers.

No wonder, therefore, that the cry in respect to the Gothic churches is for a system of lighting which shall respect an architecture designed under such conditions. Glaring electric lights or incandescent gas lamps, centrally suspended along the nave or placed on stands, are exactly what are not required. They may give ample light to enable members of the congregation to read hymns printed in small type, but even so, they are generally irritating to the eyesight. In some way or other the source of light should be concealed. The lamps are preferably more numerous and of lower power, placed, for instance, above the capitals of the shafts or suspended with a dish below them, to reflect the light upwards instead of downwards, and so allow it to spread evenly.

Of course more illuminating power is required if this sort of thing is done, and where economy is a great consideration, as it often is, the more obvious plan of exposing the light may have to be resorted to, but even this might be subject to a great deal of more care and discrimination than is usual. The light above the pulpit, for instance, need not necessarily blind the preacher or throw his face entirely into shadow, and in no case is there any reason why the filaments of incandescent lights should be visable through clear glass.

Lighting in relation to Design.

In the case of new buildings the positions are somewhat reversed. The architect can then, at any rate, consider his method of artificial illumination at the same time that he is preparing his plans and provide accordingly; in fact, all careful architects do so. The style in which they are working may be controlled by other circumstances, yet it is undoubtedly recognized that places which are to be brilliantly lighted, such, for instance, as theatres and restaurants, ought to be designed in brilliant colour, trusting to surface decoration in polychromy and gilt rather than to moulding and carving. This follows tradition, being according to the rule which allowed this sort of thing to be done in the Byzantine, Moorish, and Indian work executed in countries where the sunshine is most brilliant.

Under such circumstances, too, it is unquestionable that classic forms are more suitable than Gothic, and for the same reason, that the classic styles developed in the brilliantly lighted lands of Greece and Italy, while the Gothic arose in the duller countries of the north. We may even go so far as to say that the highly refined work of Greece was only possible in a land where the sunshine was extremely bright, and that, given similar artifical conditions of high illumination, we should do well to use the same extreme precision of workmanship and delicacy of form as did the Greeks, combining with these the use of that beautiful material which so largely assisted them. For this reason low relief work in highly polished marble, or even in plaster, looks exceedingly well in an electrically-lighted hall, while much elaboration in high relief appears vulgar and gaudy.

Some Errors in Domestic Illumination.

To the great majority of us it is, however, domestic work which is of the greatest interest and importance, for while we may occasionally spend a few hours in large buildings, we most of us live our lives in offices or homes. Here, again, the tendency of the moment is towards too obvious lighting, placing high candle-power lamps, for instance, over the centre of the dining table, when several of lower power placed round the room would enable everything to be seen quite as distinctly and with much less strain upon the eyesight.

It is certainly no essential part of one's comfort to be dazzled during meal-times, while the central light is one of the most inconvenient if the room be used for other purposes, such as for reading or for working. Whatever be the employment, and perhaps most of us use our dining rooms for general purposes, the great need is that the lamp shall not be placed in front of the eye. On a winter's evening one naturally turns to the fire, and the lamp should then be arranged in such a position as to throw light upon the printed page or the piece of needlework, and from behind the shoulder yet not behind the head.

Similarly in a drawing-room it is necessary to select the position of the lamps to suit the furniture, the piano in particular requiring attention. A central light is obviously absurd, for if such be the only means of illumination, the piano has to be placed with its back against the wall, while the singer interposes his person between the light and the music. Wherever music is really loved, as it is in most families, it is well recognized that the singer should face the room. This to a large extent controls the position of the piano, which has also to be regulated by such essential matters as keeping it out of a draught and in a position where the temperature will be uniform. An architect, in planning a room like this, will always, if he is wise, obtain information as to whether a cottage or grand piano is to be used, and will arrange a place for it, thinking last of all of the source of artificial illumination, which must be chosen to suit the piano and the other features of the room.

The common mistake made in bedrooms is again that of not recognizing where the light is required in relation to the furniture, particularly when electric lights are used. The dressing-table in particular requires attention, and is best lit by several small lights or a diffused light, which will give a good reflection from the looking-glass, both of the front of the face and of the back when a hand-glass is used. With regard to the bed, the light is commonly suspended over the centre of it, where it is most trying in case of sickness. The right position is against the wall at the back, so as to throw the light upon any book which the invalid may wish to read, and not into his eyes.

Throughout the house the same rule applies, that many low-power lamps are preferable to a few of high-power, and that diffused is generally better than concentrated lighting. This is more particularly the case with regard to the decorative effects, giving much more opportunity for the architect to display his skill as well as for the owner to arrange his furniture and hangings with good results.

The Architect should control the Lighting.

A clever designer can, however, utilize modern artificial lights to enhance the beauty of his work. He can show his light or hide his light just as best suits his design, or throw it by means of shades and reflectors in any direction which he may desire. The effects produced may perhaps be a trifle theatrical, but there is no real necessity why they should be so if the architect really possesses the artistic instinct. All of us, though often unconsciously, recognize the difference between a room which is artistically lighted and one which is not, and we all appreciate the value of gradation. This it is that the artist must seek, combined with occasional sharp contrast, if he is to succeed in properly lighting an interior. Uniform monotony, even the monotony of brilliance, is scarcely ever satisfactory. There is always a temptation to an amateur in the matter to so arrange his lights that there is no shadow or shade or difference of tone, but while doing this he is destroying all delicacy of effect and everything that goes to produce a perfect picture.

Reverting once more to the case of great churches already alluded to, how much more peaceful, how much more solemn they are when certain parts are thrown into gloom, than when all are brilliantly lighted! Shadows give a sense of mystery, and tend to restfulness. It is only very occasionally that uniformly brilliant light is needed, as in a ballroom or an opera-house on a gala night; and even in the ballroom there is no reason why, in regard to the gallery, if there be one, the space beneath it should not be allowed to rest in its normal shadow, and the gallery above more dimly lighted than the rest of the room.

If something of this sort be done the beauty of the scene, instead of being detracted from, is enhanced by emphasis. On all points, therefore, it is well that an architect who designs a building should control its lighting also; but he must do so with knowledge and understanding, and in full consultation with those who know best the peculiarities of the system of lighting which it is intended to adopt.

Stirrups in Reinforced Concrete Construction. Their Place and Power.

By Mr. W. H. BROWN (Member).

THE fact that 90% of the failures in reinforced concrete are diagonal tensional failures, resulting from shear stress, is proof of the necessity of vertical or shear reinforcing members for this purpose. These vertical reinforcing members, to be effective, must fulfil the following conditions, viz. :—

(1) They should be positively, rigidly, and irremovably attached to the main tensional reinforcing bars, in order that the initial stresses may at once be arrested before the rupture and cracking of the concrete.

(2) They should cross the actual lines or planes of rupture at right angles.

(3) Their distance apart should vary inversely to the ratio shear of diagonal tensional stresses. Such distances should never be equal to the depth of the beam.

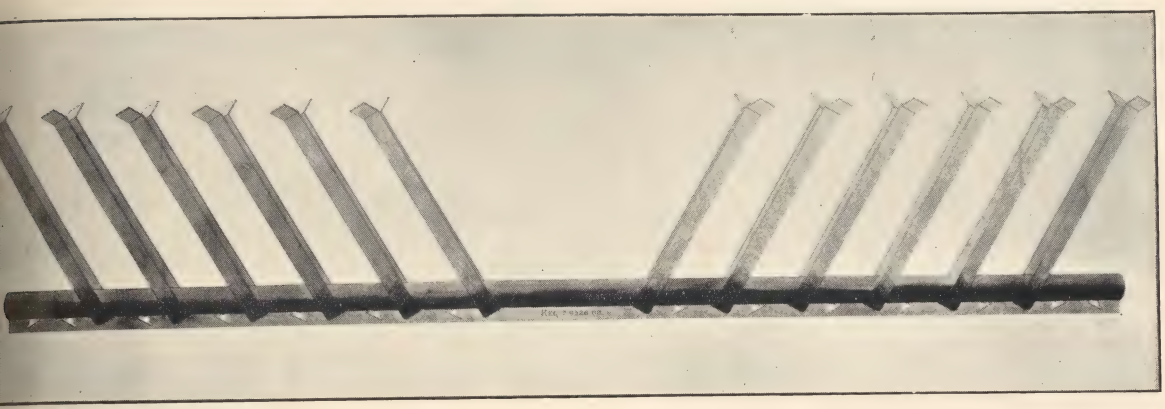
(4) They should bind together the tensional and compressional areas of the concrete, and for this purpose they should be carried well toward the centre of the unsupported part of the beam.

All existing systems lay claim to having fulfilled the foregoing conditions, but experience soon reveals the magnitude and direction of their failure so to do. Several engineers have attempted to fulfil the first condition at the expense of the others by using a number of small bars for the main tensional reinforcement, and turning up their ends to form the vertical or shear reinforcement.

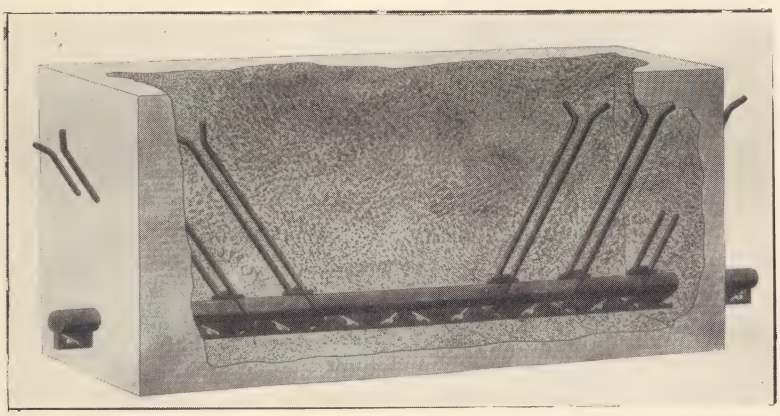
The result is, that instead of the vertical members conducting their shear stresses to the main reinforcing member, they conduct it to one part only, too weak in itself to absorb the stresses conducted. It can readily be seen, that, in order to obtain a dozen shear members, it would be necessary to have a dozen main tensional members. Such a weight of steel in the centre of the beam, the surrounding concrete could not support, and in the case of fire this volume of steel would in itself constitute a serious danger. As a result, a less number of horizontal tensional members are used than would be required to produce the required number of shear members, and more concrete is used presumably to absorb tensional and shear stresses. Other engineers use a main tensional reinforcement having flanges, out of which they form their diagonal shear members.

This is an attempt to fulfil condition No. 1, in that the shear members are claimed to be rigidly attached to the main tensional reinforcement. In an ordinary beam the sum of the lengths of the shear members is ten times greater than the length of the flange or web of the bar, from out of which they are proposed to be formed.

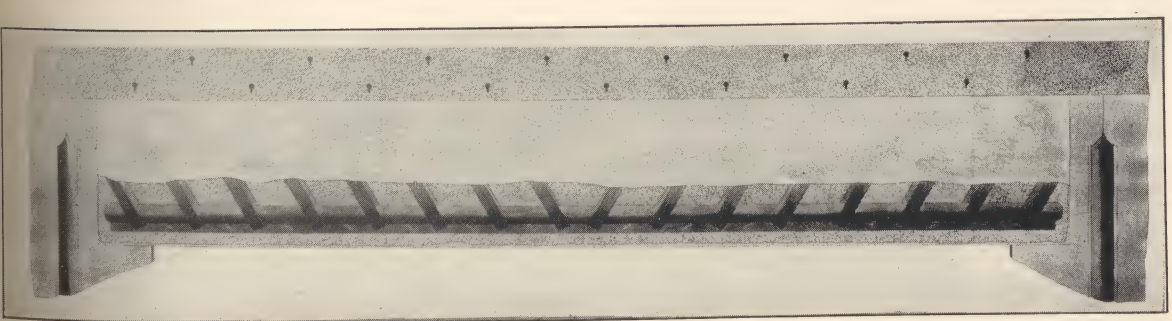
The result is that here again you have to insert a larger number of main tensional bars than is necessary, in order to obtain the requisite number of shear members.



PERFECTOR BAR AND STIRRUPS ready for Insertion in the Concrete.



PERFECTOR BAR with Round Stirrups.



THE PERFECTOR BAR in a Beam.

The other objections to this bar are, that the main reinforcing or tensional members are held *by* or *on*, which may be termed a minus quantity, instead of being held *in* the shear members or stirrups, which for comparison may be called a positive effect.

Another objection, less important, is that they cannot be packed closely for transport, during the course of which the shear members are liable to become damaged.

Other engineers adopt the loose stirrup for their vertical reinforcement or shear members, using a round bar for their main tensional reinforcing member, the idea being that the round tensional member has a positive seat in the loop of the stirrup. In theory this system is supposed to fulfil every known condition. In practice it is open to two objections, the first of which is, that the stirrups cannot be rigidly and irremovably attached to the main reinforcement, consequently it is impossible for the main reinforcing member to absorb the initial shear stresses in the stirrup or secondary member.

This objection is not lessened by experience, which proves that in the process of tamping and ramming of the concrete, the stirrups oftentimes are forced out of their original positions, which usually ends in their being anywhere but in the places in which they were intended to be. Even with the most conscientious and careful oversight and workmanship, it is possible that in the ordinary process of compressing the concrete, not one stirrup in ten will be found in *positive contact* with the main reinforcing bar

Engineers therefore using systems having loose stirrups or shear members, are compelled to adopt such a factor of safety as will cover the reduced value of these shear members, a result of the uncertainty of their actual positions when the work is finished, and their consequent ultimate effect on the supposed strength of the reinforced concrete beam in which they may have been used.

As a set off against these objections a great point is made of the fact that the ordinary round commercial bar is used, and the inexperienced are thereby led to believe that they can obtain ordinary round bars of suitable length and strength, for reinforcing concrete, at any iron stores.

The writer's personal experience, which has been both large and varied, has proved that it is impossible to buy a quantity of round bars, either of the correct lengths and sizes, or that will stand the necessary tests, from stock. The usual practice is for the contractor to contract with the rolling mills, to supply the bars of the correct sizes and to stand the specified tests.

The writer has always sampled the steel for every contract at the rolling mills, sending the samples to Lloyds proving house for testing, and having each bar of the bulk above half an inch in diameter, punched near the centre of its length with a

private mark. If any portion has to be condemned, it is condemned at the rolling mills, thereby saving loss of time and expense of carriage, but in no instance have I found bars supplied by ordinary iron merchants capable of standing Lloyds test.

The Perfector Bar and system, however, fulfils every condition and possesses none of the foregoing objections. It is a round bar with a thin web which is slotted to receive either flat or round stirrups.

The stirrups can be easily and quickly threaded through the slots, and once through they become rigid and immovable. In this position the bar has a positive seat in the stirrups, and initial shear stresses are arrested.

The stirrups can be fixed as close together, or as far apart, as may be desirable.

The stirrups can be fixed at such angles as may be necessary to cross the planes of rupture at right angles.

The stirrups cannot be displaced by the ramming or tamping of the concrete or by any carelessness of the workmen.

The stirrups and bar will be found to be exactly in their intended positions when the work is finished.

The effect and value of the reinforcement can be ascertained with mathematical exactness.

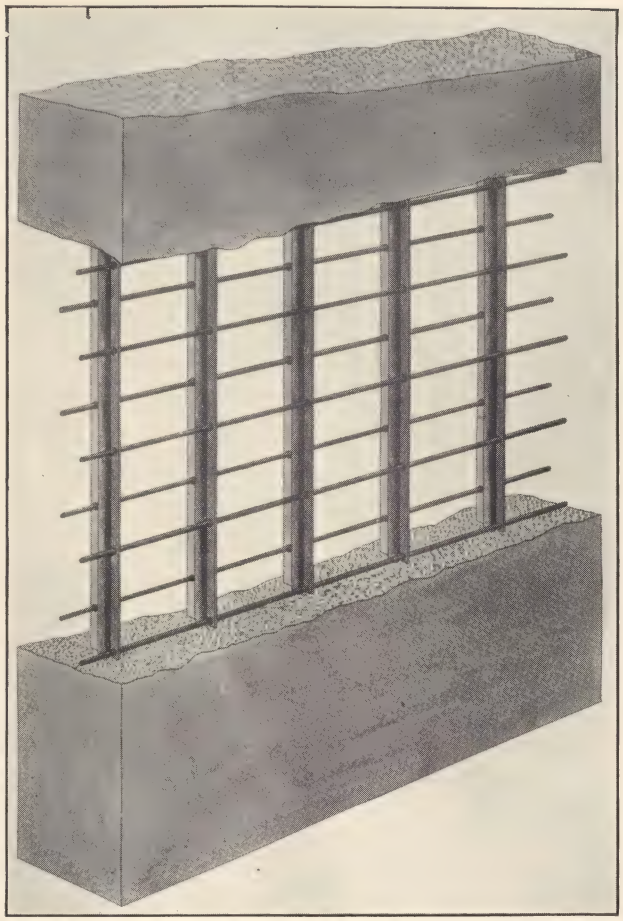
Factors of safety become real values and not a cover for a faulty system, bad workmanship and uncertainty.

The stirrups anchor the bar at any number of points. The value of this anchorage cannot be over estimated. It is a fact that a twisted or corrugated bar develops a much greater strength when embedded in concrete than the ordinary round bar. The limit of this additional strength is reached when the concrete in the corrugations shears in itself from the main body of the concrete, then its strength becomes frictional resistance only.

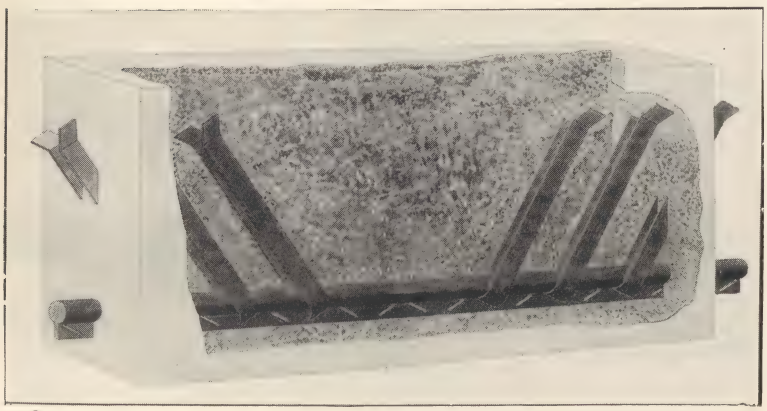
The permanent and positive anchorage of the Perfector Bar over the mechanical bond of the corrugated bar can only be compared to the value of the bolt and nut over the nail or screw.

Therefore a beam reinforced with Perfector Bars has the advantages of every system bar, and bond, with the addition of an indestructible anchorage that nothing can affect. At the same time it has *not one* of the many disadvantages from which most systems and bars suffer.

It can be rolled as cheaply and quickly as the ordinary round bar, and will stand Lloyds test, and develop a strength out of all proportion to the amount of metal used, when compared with other bars and systems.



Concrete Wall Reinforced with Perfector Bars.
Note the rigidity of the supplementary bars.



Perfector Bar with Flat Stirrups.

Perfector Bars
as used in Piles.

Note how Links are
locked to the
Bars.

Shear and Stripping
impossible.

London Building Act. Height of Buildings.

Attorney General *v.* Metcalf and Greig.

Last Autumn an action was brought for an injunction to restrain the defendants from erecting any building on the Western side of Salem Road, Paddington, contrary to the provisions of the London Building Act, 1894, and for a mandatory order requiring the defendants to take down so much of the block of flats as had been erected contrary to the provisions of the Act.

The question was whether the defendants had prepared their plans and carried out the building in accordance with the clauses of the Act relating to the height limit, or whether any infringement of the Act had occurred. The late Mr. Justice Kekewich upheld their arguments, and dismissed the action. The plaintiffs appealed, and the Master of the Rolls without expressing any opinion, thought this was a case in which the defendants ought to have an opportunity of applying to the London County Council for their consent, on the understanding that the Court in no way indicated whether they thought this was or was not a case in which the height ought to be relaxed. The appeal therefore stood over to allow the application to be made, with the result that last month the London County Council consented to the retention of the Building in question exceeding in height the distance of the front or nearest external wall of such building from the opposite side of such street.

Lightning Conductors and their Application.

Those who were privileged to hear and witness Mr. Hands' lecture and demonstrations on April 9th, before The Society of Architects, will be aware that he has thoroughly mastered his subject, on which he is one of the foremost authorities. It may not however be generally known that he is the senior partner of the well-known firm of Lightning Conductor Experts, Messrs. J. W. Gray & Son, of 91, Leadenhall Street, E.C., and that therefore he is equally at home in applying his scientific knowledge to practical purposes.

Besides this, Mr. Hands, who is a Fellow of the Royal Meteorological Society, is the author of *Scientific Protection; A Guide to the proper Application of Lightning Conductors, Thunderstorms: the Damage they cause and the means of Protection*, also of Lectures and Papers before the Royal Engineers, International Fire Congress, 1903, Architectural Association, The Society of Architects, and other Societies.

It is some sixteen years ago since a similar paper was read before the Society by Mr. Hands, who has in the meantime very largely extended the scope of his researches into the science of static electricity.

Reviews and Announcements.

How to Estimate; being the Analysis of Builders' Prices. By J. T. Rea., F.S.I. Third Edition, 1908. B. T. Batsford, London.

This book, revised and enlarged, with prices brought up to date, presents in itself a most valuable adjunct to the estimator as a standard work of reference. Too frequently, as the author points out, are prices made up in a somewhat haphazard manner—partly by rule of thumb and partly by reference to published price books. We have in this work a system underlying the whole fabric of prices by which values may be built up in a scientific way, by dissecting, taking asunder, and examining the various elements that go to make up the price of a particular item as described in the bill of quantities upon which a builder is asked to tender. The author has expended an enormous amount of labour in the fullness of detail with which he has treated each division of the building trade: the tables and statistics set forth are extremely valuable. As an instance of the care expended we may cite the concretor, in which subject the author treats of the voids in aggregate, giving a table of the different aggregate used, showing the cubical contents and percentage of void in each cubic yard of the respective material given; also the shrinkage of the matrix is given, and the compression of the whole of the material, after mixing, watering and ramming in position. Thus we find throughout all the subjects treated the same reliable detail and valuable data. We can but admire the industry and skill which the author has brought to bear on this work, and we can with confidence recommend our readers to include this publication in their collection of standard reference books. At the same time we must point out to the student that prices and values must, after all, be treated strictly on their merits, and that judgment and experience is required to apply them at their true worth. Most contractors, in these times of stress and strain, would hail with delight the prices given by the author, which unfortunately competition forces down to a minimum. But, as we have pointed out, the work before us is not a price book to be slavishly copied, but a means by which the estimator may build up his prices from the various data at his disposal.

A branch of Engineering Construction, which has grown to so important a position that engineers and architects must be familiar with its application, is that of Reinforced Concrete. Messrs. C. F. Marsh and William Dunn, authors of a recognised standard work on the subject, are providing through Messrs. Constable a *Manual of Reinforced Concrete and Concrete Block Construction.* The material in the manual will be found invaluable to Architects, Civil Engineers, Draughtsmen, and Foremen of Works, and to all who require knowledge of Reinforced Concrete structures. It gives, in concise and handy form, consistent with a clear presentation of the subject, the methods employed for the solution of everyday problems, with the information most frequently wanted in common practice. The tables and diagrams are designed to save considerable trouble in necessary calculations.

Annual Dinner and Summer Excursion.

Postponement and Alteration.

Owing to the severe and long continued illness of the President it had been found necessary to cancel the Annual Dinner fixed for May 22nd, until October 14th, and to postpone the summer excursion to Mansfield, arranged for June 18th and following days. In place of the latter one or two "Field Days," were being organised, but the President's death has caused all arrangements for social gatherings to be suspended for the present.

Mainly about Members.

We regret to announce the death of Mr. G. Gard Pye, a Past Vice-President of the Society, which took place on Easter Day, at his residence at West Kensington, after a short illness. Mr. Pye, who was 59 years of age, was articled to Mr. H. W. Hayward, of Colchester, and subsequently practised in that town for a time, afterwards transferring his practice to London. He joined the Society in 1889 and took an active part in its affairs. During his tenure of office he was a regular attendant at the meetings and other gatherings, and contributed several papers on "Essex Churches" and similar subjects. Mr. Gard Pye joined the Society in 1889, and was elected a Member of Council in 1897, and three years later was promoted to Vice-President, from which position he retired in 1905. The late Mr. Edgar Farman, Hon. Solicitor to the Society, who subsequently forsook Architecture for Law, served his articles with Mr. Pye, as did also the present Senior Vice-President, Mr. G. A. T. Middleton, A.R.I.B.A., the first Secretary of the Society.

The architects selected by the Gosport and Alverstoke Education Committee to take part in a competition for the proposed Grove Road school include Mr. Smith, Gosport, and Messrs. Rake & Cogswell, Portsmouth.

Among the Members of Council elected at the annual meeting of the Natal Institute of Architects, was Mr. F. J. Ing, of Durban. The retiring President in moving the adoption of the report, stated that among those members whose leaving is the colony's loss is Mr. M. G. Kirkby, of Maritzburg.

Mr. Carnegie has offered to give £10,000 towards the rebuilding and extension of the Walthamstow Central Library. Mr. J. W. Dunford, of 100c, Queen Victoria Street, E.C., is the architect, and his plans have two special features, providing a lecture hall to hold 500 people and a juvenile lending department.

The City Guardians have accepted the tender of Mr. Albert Monk, of Lower Edmonton at £55,400 for the works they intend carrying out at Homerton to centralise their work and administration in such a way that the workhouse and the infirmary will be under one roof. The Board has advised Mr. A. E. Pridmore, ex-President of The Society of Architects, whose plans and designs have been accepted by the Local Government Board, and it is confidently believed that the cost of the work will alter all previous estimates at which such work has hitherto been done. Instead of £270 per bed for infirmary buildings, which has hitherto been considered the minimum cost, the new infirmary will cost only £150 per bed.

Ordinary Meeting.

The Seventh Ordinary Meeting of The Society of Architects, for the Session, 1907-8, will be held at Staple Inn Buildings (South), Holborn, W.C., on Thursday, May 21st, 1908, at 8 p.m.

Agenda :—

1. The Acting President to take the chair.
2. Minutes of the last Ordinary Meeting.
3. Death of the President. Tribute of respect
4. Nominations for Membership.
5. Ballot for the following Candidates.

For Membership :—

CHEVERTON. CHARLES, 64a, Chapel Street, Devonport.
TOMLINSON. JOHN WILLIAM, A.M.INST.C.E., St. Mary's Hall, Coventry.

6. Announcements.
7. Paper on "Colour as applied to Architecture, from the Artist's Standpoint."
   By PROF. A. WALLACE RIMINGTON, R.B.A., A.R.E. (Hon. Member).

The paper will be illustrated by drawings, and ladies are specially invited to be present.

Meetings and other Fixtures of the Society.

Session 1907-8.

Subject to such alterations and additions as may be announced from time to time in "The Journal" or by circular.

1908.

May 1st. Last day for delivery of the Travelling Studentship and other Students' Competition Drawings, and for Entries for Scholarship Examination.

„ 7th. Scholarship Examination.

„ 13th. The Society of Architects Lodge Meeting, Liverpool Street Hotel, E.C.

„ 18th to 24th. International Congress of Architects, Vienna. Delegate from the Society: Mr. Ellis Marsland, Hon. Secretary.

„ 21st. Committees, Council and Ordinary Meeting. Paper by Mr. A. W. Rimington (Hon. Member), on "Colour as applied to Architecture, from the Artist's Standpoint."

June 8th. Whit Monday. Offices closed.

July 13th „ 18th. Royal Sanitary Institute Congress, Cardiff. Delegates from the Society: Messrs. James and Morgan, FF.R.I.B.A.

„ 18th „ 24th. Royal Institute of Public Health Congress, Buxton. Delegate from the Society: Mr. W. R. Bryden, F.R.I.B.A.

THE

Journal

OF

The Society of Architects

FOUNDED 1884. INCORPORATED 1893.

Including Transactions and Architectural Notes.

No. 8. Vol. I.] JUNE, 1908. [New Series.

The Society is not, as a body, responsible for the opinions expressed by individual authors and speakers.

Presidential Note.

By Mr. E. J. HAMILTON.

In entering, for a brief season, upon the office of President of The Society of Architects, I am glad to embrace this opportunity of expressing to the Council my sincere thanks for the honour they have done me, and the confidence they have shown in inviting me to fill, for the remainder of the Society's year, the office which has been so recently rendered vacant through the death of the late President, Mr. R. Frank Vallance.

Most sincerely do I join with the Council, and the Members generally, in deeply regretting the reason which has necessitated this temporary appointment. I had not the pleasure of intimate association with Mr. Vallance, but the record of his past services to our Society, together with the tone of his excellent address last November, abundantly show that the Society has lost in him a warm and most valuable friend.

The period remaining, being one during which the Society will be largely in vacation, but little opportunity presents itself for much active work ; but, in anything which may be done, I am glad to find myself in hearty accord with the expressed views of my predecessor. Especially is this so on the subject of compulsory Registration, a matter which has become a hardy annual with our Society, blossoming in every President's address. It is high time that the plant bore fruit, and anything I can do to further this end will be most gladly undertaken. The Council are at the present time, indeed, considering fresh methods for advancing the progress of the Bill in Parliament.

Looking back over the twelve years since I last occupied the Chair of the Society, it is most gratifying to note the very considerable progress which has been made.

The membership, which then stood at 519, is now nearing 1,000, the doubling of the subscription having in no way retarded the growth, whilst it has served, on the other hand, to place the finances of the Society in a thoroughly healthy condition, and has enabled the Council to undertake new work of a useful character.

The Examinations qualifying for membership, which were then just in embryo, have fully justified their creation. They have undoubtedly increased the prestige of the Society; and have, at the same time, afforded a healthy stimulus to our Student Section. It has been very gratifying to note the educative influence of our work amongst students, evinced only recently by the Competitive Designs for a Public Library; some of the drawings being most excellent, and the designs of considerable merit.

Another new feature which strikes me is the breaking up of the work of the Council into Committees, thus securing greater efficiency and more careful attention to multiplying details.

Of various matters of more general interest I do not propose to treat, as anything in the nature of an Address would be quite out of harmony with the circumstances under which I am writing.

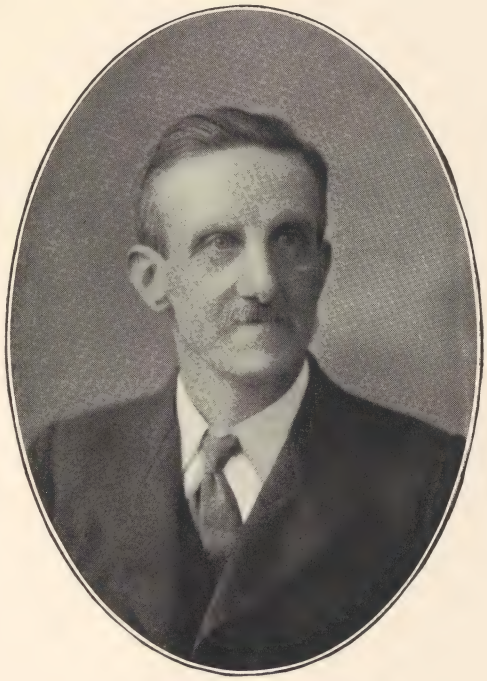
I venture, however, in closing, to make one more personal note, and to allude to the gratification afforded one, when coming again in closer touch with the work of the Council, in meeting with old friends who have laboured long and faithfully in the Society's interests; to whose untiring energies is undoubtedly due in large measure our present satisfactory position.

Visit to Colchester, June 20th, 1908.

It is proposed to visit Colchester on Saturday, June 20th, under the guidance of Dr. Henry Laver, F.S.A.

The outing is open to Members and Students and their friends, and ladies are invited.

Applications for Tickets, price 14/- each person, to include Return Railway Fare, Lunch, (except Wines, etc.), Drive and Tea, must be made to the Secretaries not later than Saturday, June 13th, accompanied by a remittance. The charge for tickets to those joining the party *en route* or at Colchester, and making their own travelling arrangements, is 8/-



Mr. Edwin James Hamilton, Past-President, 1894-5, 1895-6.

President, 1908.

Co-opted by the Council, April, 1908, *in the place of the late Mr. R. Frank Vallance.*

Proceedings.

THE Seventh Ordinary Meeting of The Society of Architects for the Session 1907-8 was held at Staple Inn Buildings, Holborn, W.C., on Thursday, May 21st, 1908, at 8 p.m.

MR E. J. HAMILTON, President, having taken the chair, the minutes of the previous meeting were taken as read, and were confirmed and signed.

The late President. Tribute of Respect.

The PRESIDENT alluded to the death of his predecessor, the late Mr. R. F. VALLANCE, F.R.I.B.A., and called upon Mr. G. A. T. Middleton, A.R.I.B.A., Vice-President, who had been more intimately acquainted with the late President, to place before the meeting some particulars of the circumstances.

Mr. MIDDLETON having briefly stated the facts, the members and visitors present rose and silently joined in the tribute of respect to the memory of the late President.

The President.

Mr. E. J. HAMILTON expressed his thanks for, and appreciation of the honour done to him by the Council in inviting him to occupy the position of President for the remainder of the Session, and his pleasure in being able to accept the office. Having some years ago filled the Chair for two Sessions and since kept in touch with recent development he hoped to be able to discharge the duties satisfactorily.

The following nominations were then announced :—

For Honorary Membership :—

ATHERLEY-JONES. L. A., K.C., M.P.	Kimberscote, Bray, Berkshire.

For Membership :—

BODDY. PERCY CHARLES,	80, Beverstone Rd., Thornton Heath, Surrey.
CAMPBELL. WILLIAM GARRETT,	Johannesburg and Boksburg, Transvaal.
CORBY. PERCY EDMUND,	15, All Saints Place, Stamford, Lincolnshire.
DICKS. HAROLD EDWARD,	Semington Cleeve Hill, Cheltenham.
FARROW. JOHN WILFORD HILBERT,	King-Williamstown, Cape Colony.
GIBB. JOHN,	Johannesburg and Boksburg, Transvaal.
HOUGHAM. CHARLES FREDERICK VERNON,	P.W. Department, Cape Town.
PEARSON. LAWRENCE LEWIS,	142, Norwood Road, West Norwood, S.E.
ROGERS. FERGUS CARSTAIRS,	Kimberley, South Africa.
SIMMONS. ALFRED,	Glenmore, 41, Allen Road, Wolverhampton.
WILKINS. VICTOR,	24, Finsbury Square, E.C.

For Studentship :—

SMITH. ALBERT GEORGE,	10, Worcester Place, Oxford.
STEPHENS. ROBERT,	New Chief Court Buildings, Rangoon.
WALLER. ARTHUR,	879, Bolton Road, Bradford.

The ballot was then taken and the following candidates were declared to be duly elected :—

As Members :—

Cheverton.	Charles,	64a, Chapel Street, Devonport.
Tomlinson.	John William, a.m.inst.c.e.	St. Mary's Hall, Coventry.

The Travelling Studentship.

The Chairman announced that forty-six sets of designs had been received and that the Council had awarded the Travelling Studentship to the author of the design marked "Owl," and a special prize of the value of £10 to the author of the design marked "Te Judice." He thereupon opened the sealed envelopes accompanying the designs and declared the winners to be as follows :—

"Owl," W. B. Walton,	27, Birley Street, Blackpool.
"Te Judice," W. T. Westbye,	14, Great Ormond Street, W.C.

Competition Design for Stabling.

The Chairman announced that five sets of designs had been received in Competition for Mr. Bond's prize, and that the Council had awarded first place to the design marked "Oak." He then opened the sealed envelope and declared the author to be :—

Arthur T. Davies, 21, Chadwick Road, Peckham, S.E.

Visits to Works and other Functions.

The Chairman called attention to the visit arranged for Thursday next at Messrs. Walter Parker's Lead Works; the Concert to be held under the auspices of the Society, in aid of the Architects' Benevolent Fund on June 3rd; and the proposed visit to Colchester on June 20th, all of which he hoped would receive the hearty support of the members.

Colour in Architecture.

Prof. A. Wallace Rimington, r.b.a., a.r.e. (Hon. Member), then read a paper on "Colour in Architecture from an Artist's standpoint."

Mr. W. H. Seth Smith, f.r.i.b.a. (Past President), in proposing a vote of thanks to the lecturer, said they were all acquainted with Mr. Rimington's work, and they delighted in his sense of colour, and great knowledge of his subject. It was very rarely they heard from a painter such remarks as the lecturer had made that evening. His well thought out and systematic treatment of the subject of colour which he modestly expressed himself as "from the painters' point of view" could only have been made from thorough knowledge and close observation of architectural monuments, as well as from a scientific standpoint. He knew of no other painter who had taken the trouble, or who had the ability, to go into the

causes of the production of colour in nature, and to analyze those effects in describing, as Mr. Rimington had ably done, what those causes were, and then to reduce that teaching from the painter's point of view to them as architects. Architects were very limited as compared with painters, not only as to their palette, but in their application of colour in several senses. They had to work for instance, in a climate which would not admit of the use of very bright colours, such as were successfully used in Southern and Oriental countries. In England, their climate was grey, and consequently their architecture should more or less partake of that grey effect. The effect of climate on colour was seen everywhere. He did not think it possible to produce in a country such as England anything like the colour effects that were common in warmer climes, where the most primary and powerful colours could be used successfully. Mr. Rimington was, he considered, somewhat pessimistic in stating that there was a general decay in their sense of colour. He thought it better to be optimistic and encourage the efforts which were being made to educate their sense of colour, by the erection, for instance, of the house in Addison Road, built by Mr. Halsey Ricardo, where glazed blue and green bricks had been used. It was impossible to use coloured material with any effect in London, unless it was in the form of a glazed surface which could be easily washed. The house referred to was a very bold attempt at exterior colour work, and to his mind fairly successful. Again, they all knew Pagani's Restaurant in Great Portland Street, which Professor Beresford Pite designed, and which was a bold attempt at external mosaic work, and a beautiful piece of colour, in its way. The roof of the Savoy Hotel had been treated with glazed green tiles such as were used in Spain, while they had, close to the Society's premises, the Prudential Assurance Company's Building, which was very pleasant to look upon, as a piece of warm colour in a thoroughfare like Holborn. With regard to the texture of their material, some of them knew that terra-cotta was a most uncompromising material with which to produce any effect ; it had such a variety of surfaces. Windows reflected the colour of the sky in a thousand different ways, and there was a variety of ways of adding to the colour of their structures, apart from the actual colour of the material used. The Houses of Parliament were beautiful owing to the light and shade effect produced by the enormous variety of form, as scarcely any colour had been introduced. Somerset House was also most pleasing, although it had no actual colour at all. Architects were also limited very much in the matter of locality. Some parts of the country were being completely ruined by the introduction of unsuitable material, notably the Stroud Valley, where for many years local materials had been used, and it formed one beautiful harmony of greys and greens. All the houses were built in the local stone, and there was not one inharmonious note among the whole, notwithstanding that half the buildings were large factories. In recent years a cheap red brick had been brought into the district, and completely ruined the harmony.

The Rev. Dr. West, in seconding the vote of thanks, said he had listened to the lecture with a great amount of interest. He thought the loss of the artistic sense was only a part of the general loss or general transference of power from one set of industries or occupations to another, which had been going on for a long time. A nation was incapable of throwing its energies into more than one line at a time, and at the present time, as for a long time past, it was engaged in industrial activity. It was, he thought, questionable how far the colour sense had decayed before the Middle Ages. The effects of different climates had to be considered in employing colour externally. In the Paris Exhibition of 1869, a lot of Persian tiles were used, and it came out very clearly that they were not so completely harmonious with their surroundings, even in Paris, as they were in Persia, where the climate appeared to harmonize almost every colour. In England, they could not attempt what could successfully be done, say in Holland or Italy. They were very apt to use flat masses of colour side by side with brilliant spots instead of keeping them separate as the Romans used to do. The painter reckoned upon his painting remaining the same for the next twenty years or so, while the architect knew his building would not, but would with time appear more harmonious to the eye.

Mr. Wilberforce, in supporting the vote of thanks, said he had learnt a great deal from it, but what had interested him particularly was the remarks which had been made about the Golden Valley, where in the new red brick buildings they had not even followed the old line of architecture. Time, he thought, might have mellowed the garishness of these, had they followed the lines of the old gabled houses of that county. He believed the L.C.C. restrained builders from erecting monstrosities in London, and something ought to be done by the country authorities on similar lines.

Mr. E. J. Hamilton (President) said they owed a great debt of gratitude to Mr. Rimington who as an artist had made architectural features his special study. With regard to red brick buildings, he practised in a district where for many years cement was used as a surface covering for walls, and one could imagine how acceptable red bricks became in forming some little variety. Unfortunately, they as architects had not altogether the choice of materials, especially when those which they would like to work in were expensive. They had to deal with clients who had their own ideas as to materials, although, as Mr. Rimington had shown it was not always cost that intervened.

Prof. A. Wallace Rimington, in reply, said Mr. Seth-Smith had described him, and perhaps justly, as being somewhat pessimistic with regard to the present outlook as to the colour sense in England. He thought it was necessary to be pessimistic to some extent in order to help them to appreciate the importance of colour, and there was he thought a real danger of their losing their sense of colour.

Dr. West had said that they did not require it any longer to the same extent that they once did, in the battle of life, but he thought they did require it, and in a large measure, as a means of enjoyment and to appreciate beauty. With regard to Dr. West's query as to the decay of the colour sense before the Middle Ages, he quite agreed that they were already at the beginning or perhaps at the end of a period of the loss of the sense of colour, and he did not think there was a refined colour sense during the great Roman period. What he had meant to say in regard to the loss of the colour sense at the present time, was that they were in one of those waves, or losses of footing, with regard to art which had come again and again upon the world.

Mr. Seth Smith had mentioned the necessity for using a glazed material which could easily be washed, and that no doubt was of some importance in London at any rate, but a glazed surface had peculiar disadvantages from the painter's point of view, inasmuch as it reflected more than anything else the colours of the materials and everything around it, while some of them absolutely disappeared. Architects had he considered a very good palette with which to paint their buildings, even in London. They had practically all the colours of the spectrum. For red, for instance, they had brick, terra-cotta, and various kinds of marbles, for yellow, they had again terra-cotta with some marbles, for blue and green they had various kinds of stone, slate and marbles. Although, as the President had pointed out, architects were somewhat limited with regard to their use of these materials, yet he thought, where expense was not of the greatest consequence, they might produce harmonious colour schemes if they set themselves to the task. Colour seemed to him to be overlooked altogether in designing a building, and it was only after the design was completed that colour was considered at all.

With regard to the use of strong colour in England, perhaps it was inadvisable to use it in some places, while in others it might be employed with advantage. In any case, it must be a question of adapting the colour used to the surroundings, and he could quite understand after a monotonous use of Portland cement that red brick would form a welcome change. In England, they were somewhat afraid of strong colour, there being an idea that it was not good taste.

With regard to the remarks made about Persian tiles, the predominant colours were of course, blue and green, upon a greenish or yellowish-white, and these colours, no doubt, were better suited to the surroundings in Persia.

Colour as applied to Architecture, from the Artist's Standpoint.

By Prof. A. WALLACE RIMINGTON, R.B.A., A.R.E. (Hon. Member).

I FEEL I ought to open this paper by making an apology to you for addressing a body of trained and professional architects from the standpoint of the painter. You have, however, done me the honour of asking me to read you a paper upon the subject of colour in architecture from the pictorial point of view or that of the artist, and my excuse for complying must be that for many years I have sketched and painted architecture all over Europe, that I have a great love for architectural subjects, and that I have given some special study to the question of colour. With this preface I must ask your indulgence for speaking from a non-professional standpoint.

Architecture is the earliest, and perhaps we may even say, the greatest of all the arts, and though she is not perhaps linked as closely with painting as with sculpture, yet some of the principles which guide the painter in his work are I think more applicable to architecture than is generally recognised to be the fact. It may perhaps, therefore, be worth while to consider a few of these principles (time will not admit of more), and to endeavour to trace a few points of contact between the two arts.

In the first place may I be permitted a few remarks as to the general question of the feeling for colour in Europe at the present time. I am afraid that we must face the fact that we live in a period of considerable decay of the colour sense in this and most of the other countries of Western Europe. There are evidence of this on all sides, and it is the opinion of many able writers upon art subjects; and not a few theories have been started to account for it, most of which do not, however, sufficiently cover the facts, nor are sufficiently wide in their premises.

In England and in Germany and elsewhere there is both a revival of feeling for colour and a retrogression, but it is to be feared that the revival is confined to the few, whereas the loss of the colour sense applies to the many.

There is no doubt some slight increase of feeling for colour in art and as used in decoration amongst the cultivated classes, but how far that is bound up with passing waves of fashion it is difficult to say, and when we turn to the lower middle class and the artisan there is not much evidence of any great appreciation of good colour, or indeed of colour in any sense.

It may be said that I am overstating the case, but compare the present state of things with regard to colour with what it was in the later Middle Ages, or in the

early Renaissance period. If we go back to Mediæval times we find colour was everywhere, illuminated manuscripts show this in their illustrations of the costumes of the people, the beauty of early stained glass and decorative frescoes and Mosaics show it in architecture ; pottery and textiles are evidence of its presence amongst all classes, and if we turn to the early schools of painting there is again much to prove how far stronger the colour sense once was than it is now. Do we not continually go back to the art fragments of these great colour periods, and study them with care and reverence, almost hopeless of excelling them in refinement and strength ? Does not the glass of Chartres, Le Mans, Fairford, or some of the German cathedrals excite our envy, and can we without great difficulty reach the colour harmonies of the working handicraftsmen who produced the enamels of Limoges and the Mosaics of St. Mark, Ravenna, Monreale, or Cefalu. If further circumstantial evidence were necessary, one might enlarge upon the fact that it is in the out of the way and little modernised parts of Europe that a pronounced colour sense still lingers amongst the common people. In many of the remote towns and villages of Spain, the every-day pottery and other simple arts of the country still show it to a certain extent, as is also the case in Dalmatia and Herzegovina. In the latter countries, in Hungary, in Roumania, and elsewhere, the peasantry are still able to design and embroider with something of the colour feeling of the Middle Ages. But where are we to find this amongst the working classes of England or France ?

If we turn from Mediæval to Eastern art we find the contrast with the present condition of appreciation of colour in Europe, at any rate in the decorative arts, still more marked. Persia, India, Japan and China, have all had their great decorative colour arts for centuries past, and they retain them to this day. Eastern colour as used by the artist is not only strong and splendid, but is also subtle and delicate, and though here and there, there may be a tendency for decorative art to run into stereotyped forms, which descend from generation to generation without much change, this cannot be said to be so everywhere. The craftsmen of Japan are at the present day still able to design in colour, to obtain ideas from nature, and transmute them into decorative patterns and designs.

If it is argued that the colour sense in Eastern nations has always been stronger and better than that in Western ones, all that can be said is that we should profit by their example and endeavour to study their methods of rendering their eyes sensitive to colour, and their minds and emotions open to its influence, and devote ourselves in other ways to developing such appreciative sense of colour as the Creator has given us.

At the present day, it is scarcely too much to assert that large numbers of people are almost absolutely insensible to colour ; they live in the world without being conscious of the fact that nature is full of beautiful colour, it gives them little

conscious pleasure, and they never stop to ask themselves how much of the beauty and interest of the externals of life are dependent upon colour.

It is not, however, necessary to press the point further. Say, if you like, that the opinion I have expressed is too pessimistic ; it is, however, better to overstate and see clearly our weak points than to underrate them ; and we shall at least lose nothing by being on our guard against this decay of the colour sense whether it is or is not as serious as some of us think, and we shall surely gain something by endeavouring to stimulate and develop our feeling for colour.

Elsewhere, and on other occasions, I have endeavoured to suggest some of the means by which I believe the colour sense can be developed, and as some of you may be aware I have also urged the claims of a pure colour art dealing with colour for its own sake much in the same way as sound is dealt with in the art of music, but there is not time to touch further upon this here.

When we consider the part which colour plays in the economy of nature, and especially amongst animals and insects, and also what an immense source of pleasure in life it may be made to us, it is evident what an important place it ought to hold in art, and in architecture and in painting and other kindred arts it holds one which it is quite impossible to neglect.

Whether we care for colour or not, whether as artists we have the colour faculty, or as architects have trained ourselves to deal with colour, it must in every case come into play in every building.

All materials employed in building have colour, and unless we decide to paint our buildings absolutely black and white, every building must be either a colour scheme in itself, or part of one in connection with its surroundings. It is certain that the effect of any architectural work, fine in respect of proportion, line or detail, may yet be completely destroyed by bad division of its colour mass, by inartistic accentuation of unimportant parts, crude and disagreeable contrasts of colour, or an unpleasant general colour scheme.

On the other hand, harmonious and refined colour, even though it may be so delicate as hardly to be perceived as colour, may as we all know add immensely to the interest and charm of a building, and even to its impressiveness and dignity.

And now, before I go on to the more practical part of this paper, let me try to clear the ground still further by saying what I am sure most of you will agree with, namely, that the whole question of colour is surrounded with great difficulties. The condition of public opinion at any rate in England with regard to colour is chaotic, and no systematic attempts are being made in the educational world to promote education in colour as a necessary part of everyone's intellectual equipment.

Many people absolutely dislike strong colour, others are totally insensible to delicate schemes. Others again are extremely dogmatic as to conventional juxtapositions of colour, for which there is little artistic warrant, and a still greater number

are swayed by every passing wave of fashion. Still there remains a large body who do in a measure care for colour and are open to its influences, and it is surely the duty of the artist and of the architect to endeavour to produce works that shall lead the public taste, and not those which pander to uneducated or vulgar opinions. In doing so they will have the consolation of knowing that their work, if sincere, will be appreciated by the cultivated minority of their own profession, and will help forward the higher aims and objects of art.

One other difficulty that the colourist has to face is the enormous length of the colour scale. An exceptionally fine musical ear can appreciate perhaps at most some 400 or 500 distinct tones, even if we go as far as to admit one-eighth divisions of a note, but the easily appreciable variations of even one tertiary colour can be counted by thousands.

The artist knows that it is as difficult to strike an absolutely true colour note in completion of a harmony as it is to sing a musical one, and yet, if he is a great colourist he will strike it with unerring feeling and truth.

Every good picture is such a colour chord, or if you prefer it, a series of such chords, combined into a complete and artistic phrase. And if this is true of a picture, perhaps you will allow me to go one step further, and say that every building ought to be as true, interesting and satisfactory in its internal and external colour as a good picture.

This much at least we may say, with some degree of certainty, namely, that every artistic building ought to have some of the elements of a picture in it, and that one of these elements is a harmonious and interesting colour scheme. At any rate, I can only say for myself, after having sketched and painted a great number of buildings in various parts of Europe, that there is little satisfaction in a building to the painter's eye, if it is not beautiful in colour as well as in form.

In two previous papers read elsewhere, I have attempted to project the light of some of the more or less accepted canons or principles of position in painting upon architectural design, and to-night, I propose very briefly to refer to a few isolated principles connected with colour, and to submit the proposition to you that they also are in a greater or less degree applicable to architecture.

Perhaps the principle which of all others I should put first is the great natural one of harmony in colour. It seems almost absurd to place such a well recognised necessity in the forefront, but I venture to think that although it is often talked about, harmony of colour is not such a simple matter as most people suppose. The artist knows well that it is one of the most difficult problems to obtain a satisfactory colour-scheme in his work which shall be harmonious, and yet not monotonous. On the other hand absolute harmony, as in music, is often tantamount to monotony.

In a really great harmony there will be a certain element of contrast, some

differentiation into partial discord, and some return to an accord. Take as an example, Gainsborough's fine picture of Mrs. Siddons in the National Gallery: the general tone of the picture is warm, but in one of the most prominent positions is a strong and abrupt contrast of blue, this is repeated, modified, and gradually harmonised in smaller quantities with the predominant amber and brown of the picture, and the result is a fine and splendid harmony of colour, yet entirely without monotony.

We are often deceived when we look at a great and harmonious picture by its appearance of simplicity, and we often fail to realise how carefully the subordination of every particle of colour in it has been felt out. Very fine examples of this are some of the newly exhibited Turners at the Tate Gallery. And on the other hand, as an instance of elaborate composition in strong complex colour of extraordinary beauty, I might quote Girolamo dei Lebri's "Madonna and St. Anne," in the National Gallery.

In many cases the contrasting notes in the harmony are not so obvious as in the instance mentioned above, and a harmonious chord is built up of divergent tints, bearing an extremely subtle inter-relation. It is more than probable that there are laws underlying the harmony of colours, although they are little understood, and have been little tested by experiment, which are nearly as fixed and certain as those applicable to music. But it would be as great a mistake to give hard and fast receipts for harmonious colour as it would be to tie the musician down to certain modes of musical expression.

I shall, however, endeavour to suggest some methods of training the eye to appreciate and originate harmonious colour schemes a little further on. But what I want to urge here and now is that harmony is of course of the first importance in painting, and that it is as a rule insufficiently studied in modern architecture, though some advance in this respect has undoubtedly been made in England during the last twenty years.

How many buildings are ruined by strong and crude contrasts of material, or of surface colouring. Nature, if you leave her alone, and give her time enough, tends to harmonise the vulgarities of colour of almost any building, toning down the sharp contrasts, and overlaying the surfaces with lichen, or enriching them by oxidation, etc. But we often refuse to learn from her, and go on cutting up our pictures with a patchwork of violently opposed colours, and destroying the effect of our buildings by crude contrasts and over emphasis. Almost all great art tends towards simplicity, though that simplicity is full of variety, and this is exactly what we find in Nature when she is producing her most beautiful effects.

All art principles are more or less derived from the study of Nature, and if we endeavour to learn from Nature with regard to this question of harmony, we shall

find that one of her principles is to build up her large colour masses by tints of only slight divergence, and that she is not afraid to pile varying colours of the same general tendency one upon another. She will, for instance, give us a tree of many and various shades of green, or if it be autumn, of innumerable tints of pale yellow and orange, all combined in the general effect into one beautiful whole. Or again, she will give us a patch of sea, the general effect of which is an exquisitely deep blue, but which upon closer examination we find is built up of a great variety of blues verging towards violet, towards umber, or towards peacock-green.

Another fact that we notice in Nature is that after giving us a long series of extremely harmonious and adjacent colours, she suddenly gives us a slightly discordant note in smaller quantity or mass. This is exactly what we find in the best Oriental decorative art where a single spot of discordant colour is often employed to make the surrounding harmonies still more delightful.

In speaking of colour in connection with architecture, and especially of strong colour, it may with a great show of truth be said that the architect has a very limited palette in the exteriors of his buildings, but there is, as a matter of fact, quite as much opportunity for producing beautiful colour schemes in tertiaries and greys, as there is in the strongest colours of the spectrum band.

There are many more or less undefined principles which might be urged with regard to harmony of colour, but after all is said and done harmony will remain mainly a matter of artistic feeling, and as artistic feeling is capable of cultivation I would venture to suggest to the architect the study of some of the great masters of harmony in colour in the sister art of painting—the works of such painters, for instance, amongst the old masters as Titian, Paul Veronese, Luini, Benozzo-Gozzoli, and Giorgione ; or amongst the more modern—Turner, Sir Joshua Reynolds, Burne-Jones, Leighton, Waterhouse, Tadema, Albert Goodwin, and other of the living members of our great school of English painters, and especially of our water-colour section of it.

I need not enlarge further upon the subject of harmony—we are all more or less familiar with the need for it in internal architectural decoration, but I would venture to urge that it should be considered still more in the exterior of many buildings. And that, as colour is so great an influence, the architect should not quite so frequently remain content with a scheme of external colour which shall be so monotonic as to become monotonous. Local colour is perhaps, more needed in this grey climate of ours than in most countries where the sun and sky give an added charm of reflected light and colour to every building. I am aware that this view is constantly controverted, but personally I feel convinced that we want more colour in our architecture in England, and not less.

Passing on from this very superficial summary of some of the advantages of the

harmonious colour scheme, let us touch upon another principle which is important to the colourist in painting, and that is what must be described as "quality" or intermingling of colour. In painting, the appreciation of, and search for, this quality in his colour has much to do with a painter's position as a colourist. A second-rate and insensitive painter sees colour only as a flat tint; for him there is none of that exquisite vibratory or prismatic quality which makes it uncertain whether the tendency of a colour is in one direction or another, and renders it difficult to analyse it. In the work of a great painter there is little or no absolutely quiescent or flat colour—it is full of a palpitating life, like the sky on a clear day—made up of slightly differing tendencies and interweavings of warm and cool colour permeated as it were with other colours, and throughout in a condition of gentle conflict. Take for instance a streak of dark-blue distance in the work of a good landscape painter. Here its broken quality shows a tendency towards green, there towards violet or purple. Perhaps, there is a broken red tone under it which tells through, perhaps there are particles of orange which do the work of rendering it luminous and transparent. Take what looks like the nearly uniformly gradated tint of a bird's plumage, or the wing of a butterfly. Examine it, and you will find that there are colours within colours, oppositions of primaries and secondaries, amber beneath green, or fine points of crimson telling through turquoise—in fact, mazes of colour combinations of which you had little suspicion when you first looked at it.

There are optical principles which may account for the need for this in the production of fine colour—the terminal rods and cones of the optic nerve are in some strange way rendered more active by contrasts and by small divergencies of colour, and the mind and imagination are stimulated by the introduction of an element of mystery into the resultant tint.

But without going further into the scientific side of the question I would rather appeal to Nature and to the works of the great masters, as I have already done.

Not only is interweaving or intermingling of colours important, but also what the painter knows as texture or quality, though quality strictly speaking, as used by the painter, includes intermingling or intercontrast.

If a single colour is used by itself and without interminglement with others it will still be more interesting to the eye if it has broken quality instead of being flat. Of course, nearly every architect knows this—the artist is also aware of it, and takes care that his colour shall be broken, and he goes further, and is often at the pains to obtain varying degrees of texture in his work so as to avoid monotony of surface. I mean to say with two adjacent colours he will take care that texture is more broken and varied in the one than in the other in cases where he wishes to obtain contrast. For instance, a very pleasing contrast is what often exists when you have a sheet of almost still water full of subtle and vibrating colour, but yet with a comparatively

smooth surface like that of satin; and where that water comes up against the broken shingle of the shore in the foreground. The latter is also full of colour and texture but of quite a different kind, and the contrast between these two kinds of texture is extremely agreeable.

It is clear that these two principles are also very applicable to colour in architecture. Again and again the artist can take no pleasure in a building which is otherwise fine in design and proportion because of its surface and its flatness of colour. Its colour surface is dead, and this deadness is very largely due in some cases to the absence of texture. Perhaps I might venture to suggest that texture is more particularly required where the material used has in itself no great variety of colour. Where a stone is absolutely uniform without any grain or streaks or other sources of variety in its colour, there some texture in the surfaces, I would venture to suggest, might be used to advantage. In obtaining colour in buildings one must remember that a substance which has texture or roughness of surface has special powers of catching reflected lights which are full of colour derived from the sky, the street, buildings, landscape, water, or other objects near it.

Monotony in some buildings might easily have been avoided had the architect felt the need for quality and intermixture of colour. It might perhaps have been done also by lessening the amount of machine-made ornament, which is employed in a building, and by using rougher material, and in fact it might have been obtained in many cases at less cost instead of more, through less insistence upon needless surface finish.

In a picture the artist is also very careful to provide fitness of touch, in other words fitness of texture, for the expression of different materials. Why should not this care to select the right kind of texture for providing suitable colour for varying materials be adopted to some extent in the design of buildings.

So far we have referred mainly to exteriors of buildings, but in a building this principle also applies to interiors. Here the architect has a much larger range of material at his command; he has paint, stains, gilding, distemper, mosaics—he can provide surfaces of all kinds, and he has wide opportunities for dealing with colour.

Of course, I know that most architects recognise the fact that quality in colour is of importance and employ it constantly. I would only venture to urge it still more strongly from the painter's point of view. In many cases, as has been said, what appears to be flat colour is really full of inter-contrast. I should, of course, not suggest that flat colour should never be used, but in cases where it is used it actually gains by contrast with colour in which there is a large amount of inter-contrast and interminglement. How much of the charm of Oriental decoration depends upon this quality: if we think of the decoration of India, or the encrusted decoration, if we

may call it so, of countries where mosaics and inlaid stones are used. In no place in Europe can one better study colour perhaps than in Venice, and there the contrast of texture in colour and in quality is extremely delightful, no doubt owing partly to age and to wear, but also to a great extent to definite intention. How beautiful are its decorative schemes in coloured marbles, and its combinations of brick, marble and terra-cotta.

Many of you, I daresay, know Sir Lawrence Alma Tadema's studio in London, I was in it the other day, and I was greatly struck by the extraordinary beauty of the colour harmonies, and the care that is taken everywhere to contrast varying qualities and surfaces, and yet to blend them into broad and simple effects of colour. One end of his studio consists of a large semi-circular apse. Above the dado which is hung with very beautiful soft-toned mediæval drapery, the wall surface is covered with thin aluminium leaf put on in such a way as to allow of a certain amount of texture: and contrasting with this again are highly-polished veined marbles of exquisite but varied colour. You have in fact the painter's feeling for harmony and quality in colour translated into the work of the skilled architect.

There is one point which perhaps I might refer to here, and that is that of course the nearer you are to a colour the finer should be the texture in it—the further you are away the coarser it may be or must be. Very often quality in colour is completely lost if it is too far from the eye. On the other hand the painter of course demands that those who are looking at his pictures should be a certain distance from them, otherwise there is no possibility of blending the almost discordant tints which he sometimes interweaves, in the hope of producing truth and harmony. But projecting the light of this principle upon buildings it would seem to me that it would be advisable to put the roughness of quality higher up in a building than it usually is. The usual course is to have the maximum roughness of quality upon the lower portion of the building, whereas, so far as colour is concerned, I think better results would be obtained if the interminglement were coarser in the upper part of the building rather than in the lower.

I am aware that the question is complicated by other considerations of apparent strength, and so forth, but I am looking at it solely for the moment from the colour point of view.

If it be granted that this principle helps us to avoid monotony in colour, there is another which to the painter is of great interest, and which he calls "exchange" —I have already briefly referred to it. In Nature we find it everywhere. Whenever we are struck by a beautiful subject we are almost sure to find that Nature is carrying out her principle of exchange of the masses of colour. Take for instance some beautiful landscape in which there is a great deal of foliage in the foreground and a blue sky above—let us suppose that the foliage is comparatively warm in colour; if

we examine it still more closely we shall find that portions of the blue sky are carried down into the foliage and reflected from the glossy surface of the leaves, or we shall find there is some small pool of water, some stone, or something of some kind (if the subject strikes us as beautiful), which is bringing a portion of the blue sky from above into the warm colour below, or vice versa. Supposing we have a sunset above, we shall again find that the warm colour of the sky is carried down or across, in smaller quantity into the cool colour down below. One often notices also in a landscape in a brown ploughed field, for example, how grateful to the eye is anything carrying down the brilliancy of the white clouds above—for instance, a white horse, a figure in white or grey, or some other object. And if we turn from Nature to the works of the great masters we shall find this great principle carried out constantly. You may say that in no great work of art is it neglected. If there is a large and prominent colour-mass, it is always repeated by the artist in a smaller and lesser quantity, and sometimes again and again, and discordant colours can in the most extraordinary way be harmonised thus. As examples I might refer you to such painters as Rembrandt, Francia, Ghirlandajo, Turner, and many others.

I do not say that the painter deliberately works the thing out, I do not say that he always does it from scientific reasons of composition, but he feels it to be a necessity, and he probably feels it to be a necessity because he is so accustomed to seeing it in Nature. In architecture it would appear to me that there is no reason why this should not be carried out further than it often is,—though it is no doubt often employed. One knows well for instance that the architect when he has a large mass of red repeats it again in smaller quantities elsewhere. But I think that it might be carried still further and studied with advantage by the architect in the works of many painters.

Perhaps I might again refer to Venice as being the place af all others which I know in which the principle is carried out. I have also noticed it in many of the Spanish buildings, especially those in the south of Spain.

This principle of exchange is especially of value I think when using strong colour. For my own part I do not see why strong colour as well as delicate and refined colour should not be more frequently used in architecture. As a matter of fact strong colour can be as refined as delicate colour if it is used properly—the artist knows this. How delightful is the strong colour of an old sunburnt chalet in the Tyrol, or that of some buildings in Russia and Holland, and other parts of Northern Europe. Science is constantly giving us new materials, new building materials, and she puts at the disposal of the architect a greatly enlarged scale of colour, and I think that this question of colour in architecture is becoming more and more important every day.

Leaving the principle of exchange, let us pass on to what the painter knows as gradation and focussing. There is no doubt a kind of painting in which flat tints

predominate,and there is decorative work of various kinds in which tints which appear flat are valuable—even though they contain "quality," but in the work of the painter as a rule gradation, as in Nature, plays a most important part. And it is extraordinary to find when you are working out a picture how often a colour proves unsatisfactory solely because it is ungradated. Gradation of course, like inter-contrast, introduces an element of mystery, an element of infinity, which again is a reflection of what we so constantly feel in Nature. In architecture this principle of gradation in colour certainly can often be carried out with great advantage in internal decoration. Perhaps one of the causes of the charm of a circular recess such as that I was describing just now in Alma Tadema's studio, is that the colour, in consequence of the varying lighting inside the recess, becomes gradated and therefore more beautiful. There are several buildings in Italy which come to my mind in which there is a tendency to gradate the colour upwards—from cool colour into warm or vice versa from warm colour into cool, through various tints of marble, grey, pink, salmon colour to terra-cotta and brick, and so forth, and some of these buildings have struck me as extremely beautiful.

Leonardo da Vinci thought painters might learn a great deal from the discolourations upon an old wall as suggesting figure designs to them, and I think that architects may perhaps also learn something from the study of some of the accidental gradations and methods of using colour which Nature is constantly employing. In a roof for example, one often finds that Nature has been at pains to gradate the colour, that she has much more colour on the top of the roof than the bottom, or that she has gradated towards some particular point. Well, I fail to see why the architect should not indulge in the same kind of gradation, it is very delightful when Nature does it, why should it not be so at the hands of the artist ?

And to revert to the question of curved and hollowed surfaces,—as I have said, a part of their colour is due to the gradation which they give in light and shade; if then we put artificial colour into them we should beware of destroying their delicate gradation by introducing patterning of colour, so strong or so pale as to overpower it, and which may weaken or injure its effect.

If you have gradation in a picture it very often culminates as it does in Nature, in what the artist knows as a focus, that is to say one point or portion of light, or of dark, which is the climax. This gives coherence and unity, and the principle being a valuable one, and constantly used by the painter, surely ought also to be of some use to the architect. With large surfaces, some portions of which are gradated, if a point of colour or of dark were used as a focus at the right place one cannot help thinking it might be used with very great effect. In the dark depths of a Moorish arch the Moorish architect will often place a deep scarlet spot of decorative colour.

Leaving this question of gradation let us pass on to that of contrast. Contrast we all know is of the utmost importance in literature; it is used at every turn Without contrast in painting it is impossible to express light, almost impossible to express colour in its full force, yet how dangerous, how extremely sharp-edged a tool contrast is, how liable to lead the artist into excess and vulgarity in effect. We may say it is the stamp of the bad artist to use contrast at every turn, it is so easy, such a tempting thing to do. If he wants to express a dark and make it tell it is so easy to put a light behind it, if he wants to make a red prominent it is so easy to accentuate it by a contrast of green or blue. But though it is so difficult to use contrast well, it is of the utmost importance as an artistic instrument, and therefore, the whole question of contrast requires careful study on the part of the painter, and ought, I think, if I may humbly suggest it, to be studied with the greatest care by the architect. In a good picture a painter as a rule uses strong contrast only once or twice, perhaps even not at all, but although he only uses strong powerful contrast sparingly, contrast is interwoven all through his picture, both in the colour and in the light and shade, but it is of a refined and artistic kind.

In any given colour which is full of quality, intermingling, of which we have spoken, is really an inter-contrast between warm and cool colour so carefully adjusted as to give a tendency either towards a warm or cool tint as the artist desires.

I need hardly remind this audience how many buildings are spoilt by over-contrast. How our eyes are pained by blue slates and red bricks, and the admixture of coloured bricks in the fronts of buildings without sufficient artistic feeling.

I should say, if I may venture to do so, that those buildings in which contrast of colour will be of most advantage will be those in which there is a tendency to monotony in light and shade, or in line and form. There contrast in colour would do much to break up the monotony of the building and render it more interesting.

Passing from that question, I propose to touch upon one other only, and that is the question of colour in relation to the high lights of any object. If you have a coloured object, an object which is producing colour, that colour of course is only the result of the absorption of certain coloured rays by the object, and the return of certain others which it does not absorb, and it would seem that any coloured object only has the power of absorbing a certain quantity of rays. If it obtains more light than it can split up into its constituents, it returns that white light as white light, and the result is that the colour which it is giving back is diluted. If you take a red rose or a piece of folded drapery in which there is no variation of the local colour, the strong colour is in the half tones, not in the lights. The common painter who has not a very sensitive eye nearly always puts the strong colour in the lights and

not in the half tones, or, at any rate, he does not maintain the right relationship between the high lights and the half tones. And that may be, not because in some instances he does not wish to do so, but because pigments will not enable him to do. It is extremely difficult to get the right relationships of colour in painting, and relationships or proportionate values are, as I need not say, of the utmost possible importance everywhere in art. In colour, they are of supreme importance, and therefore, the really fine artist if he cannot make his half tones strong enough, sacrifices his lights, and in order to do so he follows this law of Nature that the lights are always relatively pale or grey compared to the half tones.

If we turn to the work of the really fine colourists, we find this principle carried out in a very marked way. For instance, only to mention such men as Botticelli or Melozzo da Forli, we find that in order to obtain the richness and beauty of the half-tones, they almost bleach their lights. And now to reverse the application of the principle, supposing you take a picture which is particularly crude and unpleasant in colour, and you deliberately lessen the richness of the lights and do away with some of the colour, the picture actually gains in colour rather than loses.

In very early Greek work (we have a few examples still existing), we find that with their sensitive feeling for art they at once detected this, and even there the lights in their frescoes are but faintly stained. If we attempt to apply this to architecture, as I think we may, perhaps we may draw two or three deductions. Where we have a natural mass of half-tone, as for instance in the hollows of recessed mouldings we should not interfere with it, we should be careful rather to keep it rich, otherwise we should be falsifying one of Nature's principles of colouring which would probably be unpleasant to the majority of us.

Again and again one sees beautiful ornament entirely destroyed by the colour which has been used, emphasising it in the wrong place. And there is another curious thing which comes into play with colour in a recess in architecture which I think of interest, namely, that when the light is fairly strong you notice that there is an extraordinary reverberation of colour in the hollows which greatly increases its richness, and that effect is especially delightful when you see a building under reflected sunlight. Perhaps we might help to produce that effect artificially by supplying the enrichment artifically, and giving a large amount of quality to the colour of the recesses of ornament in architectural sculpture.

On the other hand, how pleasant is the effect produced by wiping off the high lights in carved work which has been painted or stained. You will find the principle of the enrichment of half-tones observed by the architects of much of the brick and terra-cotta architecture of Italy, where the strongest colours are put in those places where they are most likely to be in partial shade, and where there is more opportunity of enriching the tones, especially in the districts of Milan, Brescia and Pavia, and it

struck me very much in the church of Chiaravalle. I have also observed it in some good German work of the early Renaissance period. Observance of this principle, as I think I suggested before, enables us to deal much more easily with strong colour, and on this account it may be of service to the architect to have it in mind.

I have throughout this paper assumed that it is admitted that one of the duties of architecture is to be beautiful, and I cannot help thinking as an artist, that it ought not to be merely utilitarian. The tendency to-day, is to look at most things from the utilitarian point of view, and in literature as in art, or I should say in art as in literature, I am afraid there is also a tendency to prefer the ugly as being more impressive than the beautiful. Yet, for my own part, I can only say it is my firm belief, that if this tendency gains ground to such an extent as to become universally adopted not only is art doomed, but civilisation is doomed too, and therefore, I cannot admit that it is not the duty of the painter to make his pictures beautiful and only to make them impressive, any more than as an outsider I can admit that it should be the function of the architect to make his buildings impressive or merely utilitarian and not beautiful.

Architecture at the present-day is in competition with much more in the world than it has been before. All kinds of things are competing with the interest that architecture once aroused in men's minds. Our teeming literature takes time to assimilate, our lives are too full and many men have no time to appreciate architecture as they once had. Even advertisements compete with buildings, and so architecture being in a more difficult position, at any rate in our large towns, than she has been before, perhaps this question of colour becomes one of increased importance if she has to hold her own.

Finally, I would only again ask your indulgence for a good many deficiencies in this short paper on a wide subject, and for having suggested to you that whereas the painter has much to learn from the architect, so perhaps there may be some few principles which architecture can borrow from painting.

Matters Held Over.

Owing to pressure on our space, we are obliged to hold over several matters until another issue, including examination papers and results, reviews, personal and general notes, &c

The Eighth International Congress of Architects.

Vienna, 18th to 23rd May, 1908.

By ELLIS MARSLAND, Hon. Secretary and Official Delegate of The Society of Architects.

TO do a Congress in Central Europe in the outside of a week is strenuous work, and attending the Eighth International Congress of Architects, held on this occasion at Vienna, was no exception to the rule. The distance each way was about 1,000 miles, requiring four days and two nights train travelling, but thanks to international trains and sleeping cars the inconveniences are reduced to a minimum, and the train de luxe with its dining and smoking saloons, sitting and sleeping compartments, with their many and ingenious arrangements and fittings for your comfort and convenience, make the journey pass pleasantly enough, and having arrived at Ostend, there is no further need to get out of the train till you arrive at your destination. Although, perhaps, a little mishap such as the breaking down of an engine will occur on the best regulated railways, and this occasion was no exception, resulting in an hour's delay.

At these Congresses, it is not so much the reading and discussion of papers on various architectural subjects that make the Congress hard work, as these occupy but a minor portion of the time, but our hosts had seen to it that we should see as much of Vienna and its surroundings as could be conveniently crammed into six working days, rising up early and going to bed late.

To those attending Congresses, I would advise always getting there a day before the fair, it pays you, as you can go to the Congress Office and get all your papers and tickets and digest all the information obtained quietly at your hotel, and be ready and fresh for the opening day. If you only arrive the night before, and leave your visit to the Congress Office till the morning of the opening, you will find it full, and confusion reigning supreme, every one speaking in his own language, intent on getting what particulars he can ; the attendants have too much to do to attend expeditiously to the wants of each member, the result being loss of temper, and if the weather be warm, as on this occasion, your appearance at the opening ceremony may be imperiled, especially if it is some distance from the Head-quarters of the Congress.

The Opening of the Congress.

The opening of the Congress was by permission of the Government, in the Chamber of Deputies, in the Houses of Parliament, itself significant of the place architecture takes in the national concerns. It would take a good deal to move our Government to grant the loan of the Legislative Assembly for such a purpose, but on the Continent the use of the Parliament Houses is usually granted for the inauguration of such ceremonies.

THE NEW TOWN HALL, where the Burgomaster's reception took place.

THE HOUSES OF PARLIAMENT, where the Opening Meeting of the Congress was held.

The Home Secretary, Freiherr von Biernerth, President of the meeting, had on one side the Burgomaster of Vienna (Dr. Karl Lueger), and on the other the President of the Chamber, Dr. Weiskirchner. The Minister welcomed the members in the name of Austria, and the Burgomaster welcomed them in the name of the City of Vienna; he wished the Congress every success and a pleasant time, and trusted their deliberations would be for the good of the art they represented. Suitable replies were made in the name of the various countries, each replying in the alphabetical order with which the first letter of each country begins. This is a wise thing to do at Congresses, as it prevents any heart-burnings as to precedence, and in England, France speaks before Germany, but in German speaking countries where Germany begins with a D, Germany speaks first.

Belgium	responded	through	Mr. L. Delbove, President of the Central Society of Architecture.
Bulgaria	,,	,,	Mr. Jordan Milanoff, State architect.
Germany	,,	,,	Mr. Karl Hinkeldeyn, ,, ,,
France	,,	,,	Mr. M. H. Daumet, ,, ,,
Holland	,,	,,	Dr. P. J. H. Cuypers, architect of the State Museums.
Italy	,,	,,	Mr. M. A. Cannizaro.
Mexico	,,	,,	Frederico Mariscal.
Russia	,,	,,	Mr. L. N. Benois.
Servia	,,	,,	Mr. Joh. Ilkitsch, architect to the Ministry of Works.
Sweden	,,	,,	Mr. J. G. Clason, State architect.
Spain	,,	,,	Mr. Rich Velasquez-Bosco, State architect.
United States	,,	,,	Mr. G. Oakley Totten, Jr., A.A.I.A.

GREAT BRITAIN NOT OFFICIALLY REPRESENTED.

It will be observed in this list Great Britain is omitted, the reason was that neither the British Government, nor the City of London, nor the London County Council, had sent any official delegate, and even the R.I.B.A. had failed to appoint any one officially to represent them, consequently Great Britain was passed by, much to the annoyance of many British members, although two of the Vice-Presidents of the R.I.B.A. were present. Some one had blundered, and Britain was out in the cold, in fact, the only two British societies officially represented at the Congress were The Society of Architects, and the British Fire Prevention Committee. Where were the Provincial Societies? When shall we cease to be so insular and take our proper part and share in these International functions? It was a pity, and it was the fly in the ointment of the Congress.

The President of the Congress, Professor Otto Wagner, then read his opening address.

In the evening, the Burgomaster of Vienna gave a reception in the Town Hall, a fine and spacious building, in the Venetian Gothic style, erected between 1872-1883. The guests were numerous, the evening was warm, and the reception room was inconveniently crowded. The Mayor made a short but witty speech, welcoming

the members; he was not prepared to offer any opinion as to the value of Congresses, but he was told that the result generally was three good days and a head-ache, and as the temperature was very warm he was not prepared to keep them longer in a Turkish bath, but lead the way with the Burgomistress to the spacious Banqueting Hall, where in spite of the numbers present, some 1,400, all found a place, and a right royal welcome. Little could be heard of the toasts and speech making amid such a babel of tongues and clatter of plates, but they were confined to those of the aged and respected Emperor and the host and guests. The reception gave the opportunity for mutual congratulations, old friendships were renewed, new ones formed, and the Congress had a good send off.

Tuesday, the Congress work began, and papers were read and discussed on the following subjects :—

"Regulation of the Cultivation of Art by the State."

"Regulation of the Rules for International Competition."

"A Comparison of the Berlin, London, Paris, and Vienna Building Regulations, as regards their Influence on the Architectural Finish of Dwelling Houses, and the Appearance of the City."

"The Elements of Modern Architecture."

These papers were delivered in German, and as no translations were available, their contents must be reserved for a future number of the *Journal*.

The Architectural Exhibition. England last.

The afternoon of Tuesday was devoted to the opening of the Exhibition of International Architecture, being drawings and models, arranged in a series of rooms, each representative of a country. Austria and Germany had the largest collection, United States and Hungary the next, followed by Belgium, France, Sweden, Italy, Russia, and at the bottom of the list came England, represented by a few photographs and fewer drawings, occupying a small portion of the wall space, and principally by members of the Council of the R.I.B.A., who had again missed their opportunity and whose whole action in the Congress business can be summed up in two words, blundering and muddling. There are a good many nightmares in the art nouveau line in the Hungarian and Austrian Section. It appears as if some of the architects had ignored all former styles and types, and had endeavoured to found a style of their own based on ignorance, but many of the designs, especially in the Italian, American and Belgian Sections, were of monumental character and of great merit, and the Exhibition was full of interest. In the evening, the members of the Congress had placed at their disposal tickets for the Opera and the Hofburg Theatre, each of which was filled with a brilliant gathering. The latter is the more modern of the two, erected between 1880 and 1886. The building is monumental in design, with a richly decorated interior and spacious staircases, passages and exits, and there does not seem to be any fear of a repetition of the sad event in

1881, the burning of the Ring Theatre. Vienna seems to have set its house in order in this respect.

From the Theatre we proceeded to the Art Gallery, where a reception with music was given by the Vienna Artists' Association, followed by a dance till the small hours of the morning, Some members who remained till the end must have had small acquaintance with Morpheus, as an excursion to Semmering was arranged for Wednesday and trains had to be caught at 7.30 a.m. for a three hours' journey to the mountain hotels in that district, where lunch was to be provided, and a rest from our labors. The views on this bright and sunny day were exceedingly fine, the mountains of Styria were looking their best, the pine-clad slopes had put on their spring greenery and the undergrowth was gay with wild flowers; country chalets peeping out between the trees added to the picture, and beyond were the bare snow-clad mountain peaks, sometimes hidden by clouds and again appearing; the scene was a memorable one, but nature was in one of its fitful moods, as later the sky became overcast, the far hills disappeared in mist, the low rumbling of thunder was heard and in a few minutes a storm burst upon us, the rain descended in a deluge, and frequent flashes of lightning followed by thunder gave us another aspect of the scene, but in about an hour the storm cleared, the sun shone out and the distant scene again revealed itself. The time for departure came all too soon, and we wandered through the mountain paths to the station and to the train which was to take us back to the busy life of the city.

Thursday found some of us again in the Congress Halls, the papers being upon "Architectural Copyright" and "The Conservation of Public Architectural Monuments," both subjects of interest to English architects, but owing to their being no translations no English member put in an appearance, indeed, the British architect was conspicuous by his absence at all the meetings and seemed more concerned in his pleasures than the serious business of the Congress. This perhaps was not to be wondered at, considering the sunshine and the beautiful city.

Another interesting paper was one on the "Photometric Survey of Architectural Monuments," illustrated by lantern slides, diagrams, models and photographs. It seems a very useful instrument and can be described shortly as a camera placed on the top of a theodolite, there are of course other adjuncts and adjustments, but the governing principle is taking photos of the buildings at various angles, measuring the angles, and by that means the dimensions of the building are secured.

The final lecture of the morning's proceedings was on "Dalmatia."

Vienna and London. A Contrast.

The afternoon of the day was spent in viewing the city and its buildings, old and new. I have been in many European cities and capitals and seen them under various conditions, and I have no hesitation in giving the palm to Vienna. It was

certainly looking its best in the bright sunshine, and the foliage in its various parks, gardens and squares, was as yet untouched by the hot sun and dust. Many cities on the Continent had great opportunities for improvement when the old fortifications were removed and substituted by wide boulevards, and Vienna seems to have made good use of these. The Ring, which is the site of the ancient earth works and walls, is now occupied with wide roads planted with trees, and flanked by buildings both public and private placed in such positions that they can be adequately viewed with open squares or gardens in front, monuments and groups of statuary displayed, and all carried out on broad lines, and on well thought-out schemes to get the best effects, unlike the piecemeal way we have here; the merits our buildings possess are lost on account of their surroundings. What struck me also was the treatment of the corners of some of the buildings where they abut at the angle of two streets, many useful suggestions could be seen for the treatment of what is sometimes a difficult problem.

The tramway system of Vienna is very complete, and all parts of the city and suburbs are available by it. The traction is electric, both overhead and conduit systems being in use. The former in the less important thoroughfares, and the latter in the more important ones, the conduits running by the side of the outer or inner rail. Arrangements can be made for chartering a series of these for private excursions, and some of the Congress outings were made by this means. There are no seats on top, but each car has one or two trailers.

A word should be said as to the Ambulance System which is the best in Europe. It is partly supported by private subscriptions; there is a central station with all the necessary appliances, and the police, if assistance is required, go to the nearest telephone and ring up the ambulance. I witnessed a case requiring ambulance treatment, and a two-horse ambulance carriage arrived within ten minutes with doctor and attendant, who produced the stretcher from the inside, placed the patient upon it and then returned the stretcher and drove with the patient to the Central Depôt; if it was a minor case it was treated there, otherwise it was taken to the hospital. The ambulance is in communication with the Fire Brigade and attends all fires, and is available in case either the firemen or the inmates of the burning building require attention. The Fire Brigade is also up to date, and all the details are now propelled by electricity.

In the evening of Friday, a Court reception was held by order of his Imperial and Royal Apostolic Majesty, the members of the Congress being received by the Archduke Salvator on behalf of the aged Emperor. The prominent delegates of each country were presented to His Royal Highness, with whom he entered into conversation, after which refreshments were provided, and we departed. It is to be regretted that some prominent English representatives appeared without the customary white gloves, but as we had been wrong all through the piece, this little omission didn't particularly matter, but it was noticed.

THE CONGRESS DECLARES IN FAVOUR OF REGISTRATION.

Friday brought us again to the Congress Hall where a paper on the "Legal Qualification and Government Certifying of Architects" was read by Mr. L. Baumann, one of the State Architects of Austria; this will be found in another part of the issue, and a unanimous resolution was passed in favour of the title of "Architect" being only allowed to those who had passed a qualifying examination, conducted by a Council composed of Officers appointed by the State, in conjunction with a body of Architects. If resolutions in favour of Registration could bring about this great reform we should have had it long ago, but it is only by pegging away year after year, and congress after congress that eventually it will come. Some of us are getting old in the fight but we have this satisfaction that although it will now do us personally no good yet for the younger men who have taken the time and trouble to qualify themselves for their profession this reform will be a real benefit and the public will be protected.

Three papers on ferro-concrete revealed the fact that this new form of construction has come to stay, and the sooner architects master its details the better, and so retain work which otherwise will drift into the hands of the engineer. The possibilities of its artistic treatment were discussed, and when the translations of the papers are complete they will, I hope, appear in the *Journal*.

Two other papers, one on "The building of towns in Germany in the middle ages and its influence on the Architecture of the present day," and the other "Concerning the building of towns and legislative measures" were read and discussed and the morning's work was concluded.

In the afternoon there was a choice of three excursions, one to the Klosterneuburg Monastery, another to the medieval Castle of Kreutzenstein, and the other to the Palace of Schönbrunn with its park and outbuildings.

My choice fell upon the medieval Castle and a very interesting choice it proved. A short railway journey brought us out to Kornsuberg where his Excellency Count Wilczek had provided carriages for our transportation to his castle some three miles distant. To those who know Cardiff Castle and its restoration by the Marquis of Bute it will be readily understood what has been done to this medieval Castle of Kreutzenstein by the worthy Count. The Castle was destroyed in the thirty years war, and has taken as many years to restore, it is now as complete as in the middle ages, with its fittings and furniture, arms and engines of war, both for attack and defence. We passed up the path and over the drawbridge, into the court yard with its covered well in the centre, where His Excellency, Count Wilczek, received us. We were conducted into the Chapel where solemn music was rendered, and examined its richly decorated walls and mosaics and its artistic fittings, then into the Vestry where the elaborate vestments were displayed in their carved oak chests

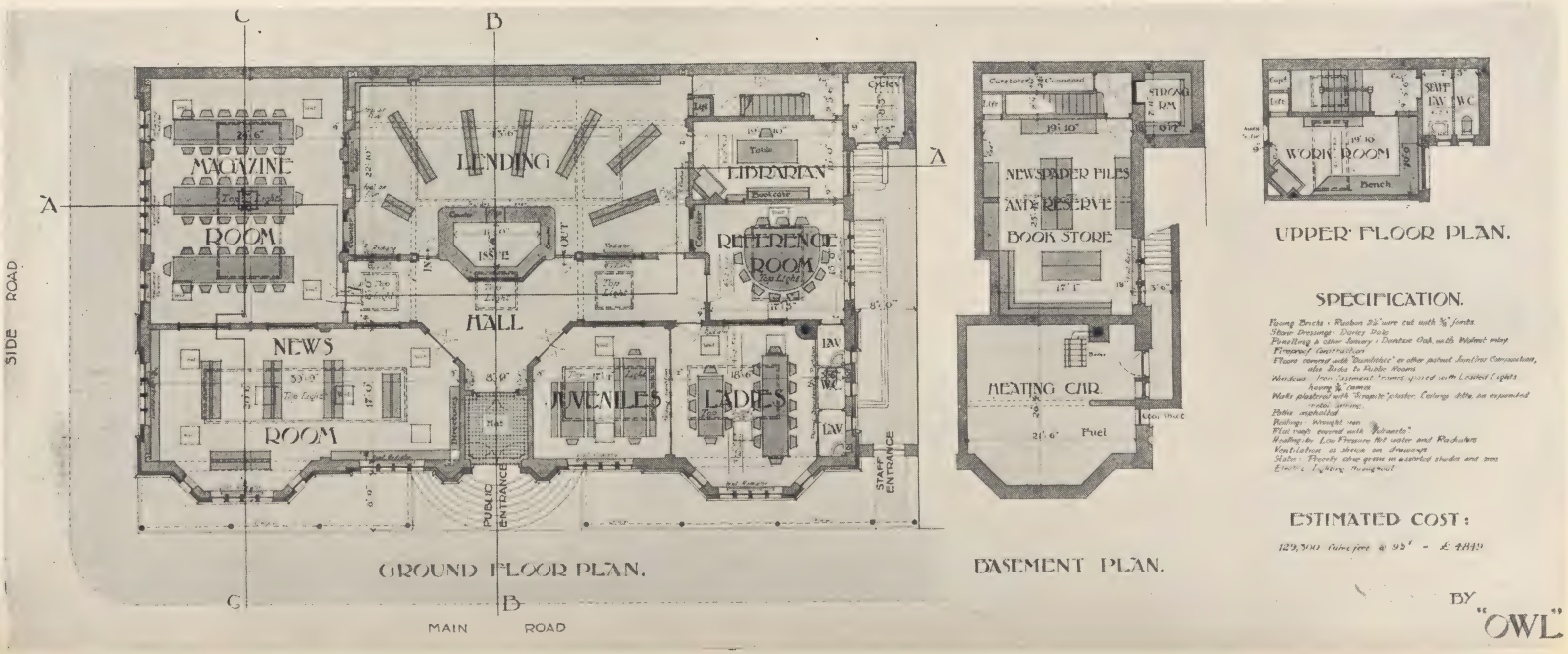
and metal fittings, then into the medieval kitchen with its fittings and accessories, as complete as in the days of yore. Afterwards into the guard room and armoury, filled with interesting details of the fighting days of old, then round the walls and up the watch towers, where the surrounding country was laid out as a carpet of spring loveliness, in and out rooms large and small, seeing old prints, pictures, books, manuscripts and furniture, and, finally, into the banqueting hall, where we refreshed ourselves after our hot, dusty and windy climb to the castle and the ramble round its interior.

I am wondering who enjoyed themselves the most? our worthy host, who, with his daughter, acted as our guide, philosopher and friend, and took such pride and pleasure in his castle and in showing us over it and giving us of his best, or the guests who had such an architectural and archaeological treat placed at their disposal with true medieval hospitality. It was an occasion not to be missed, and one to be remembered for many a long day. The Count drank to our good health in a full glass which he raised to his lips, and did not put it down till he had drained it to the last drop. Speeches of thanks were made by a representative of each country present, after which we hurried off with many regrets, as there was another function to attend, the worthy Count accompanying us to the station and seeing us off. The other function was the fete arranged by the Society of Austrian Engineers and Architects, and the meeting place was the Kahlenberg, an eminence overlooking the City of Vienna, from which spreads out a delightful view of the valley of the Danube, with the city in the foreground. The weather was hazy, and we were somewhat late in arriving, consequently the view was lost; but later on the city could be seen outlined by its myriads of lamps, and the lines of its streets clearly indicated. There was a large gathering in the various rooms appropriated to our use, and the President of the Congress presided at the banquet to which we were invited. After the banquet congratulatory speeches were made, followed by fireworks; then we made our way back by the cog-wheel railway by which we came, and by tram cars provided to take us to our various hotels, and so to bed.

Saturday saw the conclusion of the Congress—a busy day indeed. Papers at the Congress Hall on "How to give more prominence to the æsthetic side of Engineering," and "Architecture and the Public." A visit to the County Lunatic Asylum, and a lunch given by the Lower Austrian "Landesausschuss," an inspection of the new Post Office Savings Bank, Ferro Concrete tests at the Mechanical and Technical Laboratory, both useful and interesting, but as these notes have already exceeded their limits, the remainder must be left till the Congress report. At 8 o'clock the farewell Banquet at the Hotel Continental brought the Congress to a close with the usual congratulatory speeches, partings, and leavetakings, some to return home, others to retire to quiet towns and scenes to recruit and recover from the toil and strain of the week, and thus ended the Eighth International Architects Congress.

FRONT ELEVATION.

SECTION B-B.



GROUND FLOOR PLAN.

BASEMENT PLAN.

UPPER FLOOR PLAN.

DESIGN FOR A FREE LIBRARY ON THE OPEN ACCESS SYSTEM. BY W. B. WALTON, 27, BIRLEY STREET, BLACKPOOL. PLACED FIRST.

Students' Design Competitions.

Travelling Studentship Competition, 1908.

The subject was a Public Library on the open access system, to be erected on a level corner site, 100 ft. by 60 ft. open on two sides. The cost was not to exceed £5,000, based on the cubical contents measured from the bottom of footings to half way up the roof. Competitors were left to determine the accommodation for themselves. Full working drawings were required to $\frac{1}{8}$ in. scale, and two sheets of details to $\frac{1}{2}$ in. scale, and block plan to $\frac{1}{16}$ in. scale.

Forty-six sets of designs have been received, embodying two hundred and fifty drawings. This means that one in every five Students has taken part in this competition, which is probably a record for any architectural society, as regards the percentage of entries.

The general level of the drawings is of exceptional merit and is a decided advance on previous competitions in this respect.

The drawings will be on view at the Society's premises from June 1st to 6th., and later on they will be exhibited at Devonport and other centres.

The following is a list of the Mottoes under which the drawings were sent :—

"Andrea"
"Andronicus"
"Arclit"
"Bromo"
"Elf"
"Estimate"
"Excel"
"Finis Coronat Opus"
"Fleur de Lis"
"Gablet"
"Gog"
"Ian"
"Ionic" A.
"Ionic" B.
"Iago"
"Jesmond"
"Ki"
"Light and Air"
"Mente Mannque"
"Mephisto"
"Multa Paucis"
"Order"
"Owl"
"Pace Tua"
"Pad"
"Phœnix"
"Plato"
"P. Max"
"Pots"
"Q. E. F."
"Reading maketh a full man"
"Registration"
"Sesame"
"Spero"
"Spes" A.
"Spes" B.
"St. George"
"Te Judice"
"Tekton"
"T Square"
"Tyke"
"Vigilans"
"What's in a name"
"Yotte"
"Youngster"
"Yours Truly"

The Council's Award.

The Council have awarded the Travelling Studentship to Mr. W. B. Walton, of 27, Birley Street, Blackpool, for the design marked "Owl," and an additional prize of £10 to Mr. Johannes T. Westbye, of 14, Great Ormond Street, W.C., for the design marked "Te Judice."

The Designs Criticised.

Three designs came to hand after the stipulated time. The Council have had no option but to pass the latter over in making their award, and although the drawings are criticised in the following notes, it is to be understood that this must not be taken as a precedent for the future.

The large number of entries is a matter for congratulation, particularly as almost all the competitors have taken the necessary trouble to ascertain the requirements of an open access Library, and have produced workable and generally satisfactory plans, combined with elevations which indicate sound architectural training and with details which are commendable both from an artistic and constructional point of view. The task of adjudication has consequently been a difficult one, and a decision has only been arrived at after mature consideration, for no one set of drawings was the best from all points of view.

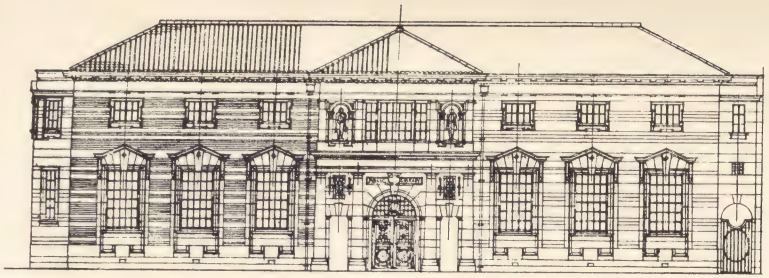
The most general fault has been that of providing more accommodation than could be obtained for the small sum of £5,000, and the consequent statement, repeated over and over again, that an obviously costly building could be erected for an absurdly low price per cubic foot. This has led to the rejection of many otherwise highly commendable designs.

"OWL" sends a plan which shows considerable knowledge of the subject, yet which has not been thoroughly thought out in all its details. There is no public lavatory for men, the staff entrance is cramped and badly lighted; at the same time the reference and magazine rooms are well served, and the lending department—if small—is properly arranged. There is no provision for advertisement stands at entrance. The elevation is quiet and suitable, and is illustrated by a pen perspective which displays considerable merit, though, perhaps too much sky and foreground has been shown. The elevation and details are well drawn.

The great merit of the scheme is that too much has not been attempted. Architecturally pleasing and sound in plan, it could really be executed for the stipulated sum.

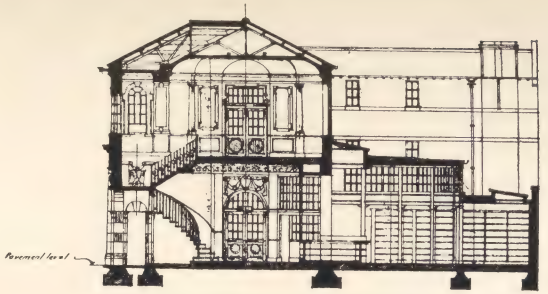
"TE JUDICE" submits an original plan having several good points. The arrangement of the attendant's counter in a circular recess off an octagonal hall is distinctly clever as also is the placing of a double way staircase in the front hall. The lending library is of ample size and properly radiated, while there is plenty of book storage in addition, and good staff accommodation.

The interior presents unusual opportunities for architectural treatment, of which full advantage is taken as shown in the sections, which also indicate that the lighting of the attendant's counter and the lending department generally has been very well thought out. There is a large reference library and stack room on the first floor,



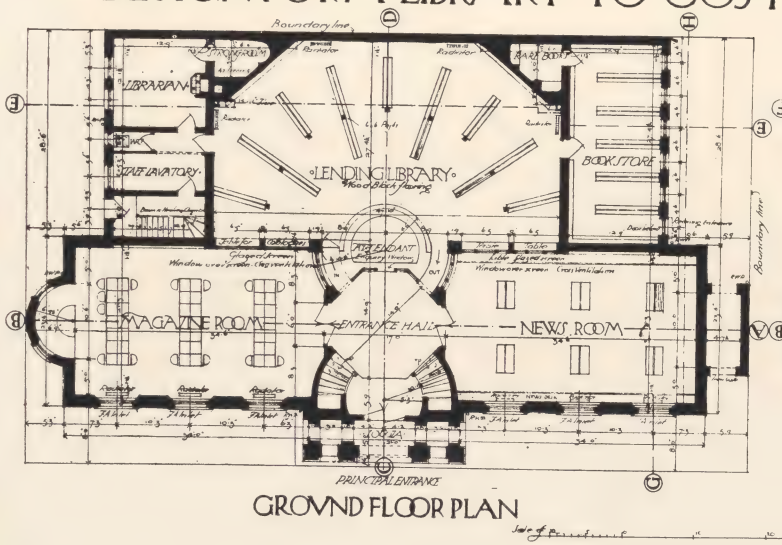
ELEVATION TO MAIN STREET

ELEVATION TO SIDE STREET

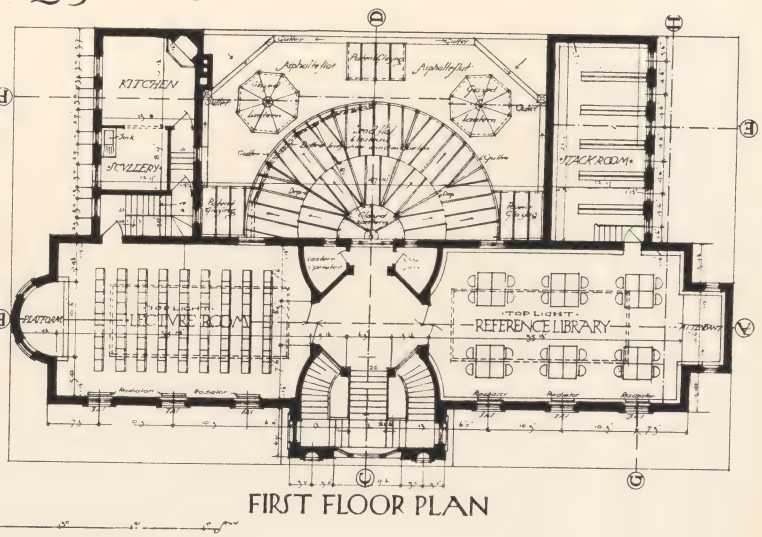


SECTION ON LINE C-D

DESIGN FOR A LIBRARY TO COST £5000



GROUND FLOOR PLAN



FIRST FLOOR PLAN

Design by J. T. Westbye, 14, Great Ormond Street, W.C. Placed Second.

and also a lecture room to which the public are admitted by the main staircase, while the lecturer can reach it by means of the stairs which lead to the caretaker's house.

As in all cases where a second floor is provided the cubic contents appear to be large, but this has been minimised by not using by any means the whole of the available ground area, with the result that good lighting is obtained all round the building. The main portion of the building is priced at 1/-, and the remainder at 6*d*. per cubic foot. This is not entirely unreasonable, and just brings the cost within £5,000, but considerable economy would have to be exercised in order to make this suffice, and probably a good deal of the ornamental detail would have to be cut out. The exterior has a somewhat Southern French or Italian appearance, but this is no detriment. The building is as artistic as any submitted, and thoroughly suitable. Much is made of a good projecting entrance, and of widely projecting eaves. The details also are thoroughly workmanlike, well drawn in pencil and very fully figured.

"SPES" (B). A compact plan with well arranged entrance hall, but no convenient way of serving reference room with books from the loan department. There are no proper stack rooms, and the Librarian's house is awkwardly planned, the bedrooms being only reached through the kitchen. The elevation suggests that the author may do good work when he possesses a fuller sense of proportion.

"BROMO" exhibits lamentable ignorance of the requirements of a library and submits a vulgar and badly coloured elevation. He ought to join some good architectural classes.

"SESAME" does not seem to have learnt that the essence of good planning is simplicity. He introduces many awkward corners, cuts his Librarian off from everyone and provides no supervision. His elevation is pretentious but above the average.

"PAD" works with a fine line and shews so much detail on his plan that it is difficult to follow. There is much to be said for his simple and well supervised plan, with its large rooms all on one floor, even though the lending space is interfered with by columns. The elevation is spoilt by the heavy entrance with its unnecessary arch, and the details display no great constructional or artistic ability.

"ARCLIT" submits an elementary plan, which utterly fails to recognise the need of supervision. The other drawings are uninspired and their constructional details are not thought out properly.

"YOTTE." Well supervised except for some of the book stands, and roomy, but the corridor which acts as staff entrance is dark, and the long gutter between the two long roofs would be a nuisance in snowy weather. The elevation, though scratchily drawn, is by no means unsuitable, but the details are weak and the carving out of scale.

"IAN" forgets to provide a Librarian's room, and does not serve his reference room well, while he devotes so much of his central space to a borrowers' corridor that the ladies' and children's rooms are cramped. His elevations are suitable and well drawn, and his construction is sound.

"SPERO" wastes so much space in his entrance hall that he has scarcely any left for the library, the rooms of which are badly separated, unsupervised and ill-lighted. A great deal has been made of a museum (which was not asked for) on the upper floor, and this occupies so much space that the price has been stated at 6½d. per cub. ft. in order to bring the total within the limit. At the same time a most expensive elevation (Ionic) has been indulged in, and much costly internal decoration also. The best point is the provision of lavatories near the entrance. The dome would not stand unless it were reinforced.

"EXCEL" obviously exceeds the cost limit. His lending department is semi-circular, with radiating bookshelves, but no advantage is gained, the sole practical result being to produce some awkward corners in the yard. Supervision has been lost sight of. The elevation is commonplace but the details are well worked out.

"MENTE MANNQUE" spoils his plan by carrying his central corridor out to the end wall and then failing to provide a staff entrance except through the stack room. The staff w.c.'s are very badly placed. The elevation is quiet and possesses some dignity, and the details are well drawn.

"MEPHISTO" seems to have imagined that the great thing to do was to provide luxurious public conveniences and a grand staircase, clothed with a vulgar exterior and illustrated by the roughest of rough drawings. He also imagines that 6¾d. per cubic foot is a fair price for a pretentious building.

"ELF" submits a well considered scheme, displaying considerable knowledge of his subject. A large rectangular lending department, with radiating stands, faces the entrance and overlooks a wide borrowers' hall, having recesses for time tables and directories on either side of the vestibule. The reading and reference rooms are both reached directly from the hall, and are easily served and perfectly supervised, while the staff arrangements are excellent. It is not obvious, however, how the large lead flat is to be cleared of snow, or even how it is to be reached for repair in case of need. The elevation is suitable, quiet, and well proportioned. It is doubtful if it could be built for 9½d. per cubic foot. The roof construction is weak, and insufficient lavatories are provided, there being none for the public, though they could easily be provided.

"READING MAKETH A FULL MAN" has a good compact plan, the idea of placing early advertisements in the entrance porch being distinctly good. The stacks in the lending library are not well placed for supervision but are easily accessible; they ought to radiate from the attendant's counter. On the whole the space allotted to this department is insufficient; while the staff quarters would be dark unless a top light were obtained over the staircase. If anything there is too much lavatory accommodation for the staff and none for the public. The elevation is nearly good but not quite. The gable does not fit at all nicely on to the cornice, and the ornamental detail, particularly to the iron work, is undignified.

"JESMOND" spoils his plan by an indirect entrance, while he clearly does not know what is the usual way of admitting to an open access library. It is stupid to provide a recess in the juveniles' room where they can get up to mischief without being seen. No reference room or public lavatory accommodation is provided and the elevation is poor.

"POTTS" has tried something which is entirely beyond him, though he has remembered to put the public lavatories in their right place.

"REGISTRATION" has not forgotten the early morning advertisements, and submits a well-drawn set. Unfortunately his lending stacks are not properly radiated, the attendant's counter projects into the hall, and he forgets that when the open access system is in use the books must all be easy to approach by the public, so that a stack room of so large a size as he shows is valueless. It is not usual to make a combined bath room and w.c. more than 15 feet long as has been done in this case; it would have been quite easy to have separated them. The caretaker's living room and bath are in the basement, from which he has to go up by an absolutely dark staircase to the second floor in order to reach his bedrooms. The same staircase is used by the staff and its main landing is unlighted. The elevation is more pretentious than good.

"ANDREA" submits a very good and entirely architectural plan. There is provision for advertisements in recesses off the entrance hall, but the similar recesses for magazines and newspapers out of the reference and reading rooms respectively, might better have been devoted to public lavatories. It may be noted that magazines are not usually relegated to the reference library. The lending library is ample in size and perfectly arranged with excellent means provided for serving all the rooms.

The librarian controls the staff entrance, but is not easily accessible to the public. A lecture room is obtained on the first floor with a well managed independent entrance, which also serves for the juveniles, and good provision is made for a committee and for the admission of the lecturers. The cost is estimated at 9d.

per foot cube. The lower part of the elevation is satisfactory enough, but the raised roof to the lecture hall spoils the general effect. The details have been well prepared and show that the candidate has been well trained.

"ESTIMATE" elects to make his lending department semi-circular, without any means of passing round the ends of the radiating racks and no provision for wall stands. The book accommodation would therefore be very small, and borrowers would constantly find themselves in a *"cul de sac."* A public lavatory, evidently for men only, is provided in the basement, and apparently the public could also obtain access to the book stores and heating chamber by means of a staircase from the loan department.

The heating chamber can only be approached through the book stores. The elevation rather suggests a castle gate-house. It is a pity that so much good drawing, particularly in the detail, should have been spent upon so eccentric a design.

"YOURS TRULY" submits a most original set, putting his lending library as a semi-circular projection towards the wide frontage, on the first floor, with a similarly shaped reading room beneath it. For architectural effect there is a great deal to be said for this scheme, if only the wings had been proportioned to the centre, but as a matter of convenience it is certainly undesirable to place the lending department, which is more used than any other, on an upper floor. Public lavatories are provided, the book stacks are well supervised, and there is a good lecture room in a quiet position on the ground floor, having a separate entrance, while the lecturer can get in through the main hall. It is provided with a ticket box and a recess for cinematograph or lantern. The principle fault in the plan is the absence of lighting to the long lower corridor, although this could quite easily have been obtained by reducing the width of that on the upper floor. The price is put at $8\frac{1}{4}d.$ per ft. cube, and this is too low for a building of elaborate character, which all experienced architects would know could not be put up for much less than 1/9 per ft. cube. The best drawing is the perspective, and the drawings generally are well executed.

"FINIS CORONAS ET VERITAS" is evidently a beginner, who has never had the opportunity of seeing good work. It is doubtful whether he ought not to reconsider the choice of a profession.

"MULTA PAUCIS" enters his building from the corner, but fails to take advantage of the opportunity thus offered for a good crescent shaped lending library with properly radiating stands. With a little reconsideration his plan could be made thoroughly good. There are no public lavatories, though they could have been easily introduced. The elevation requires redesigning. The detail sheets display good draughtsmanship and give more promise than does the small scale drawing.

"GABLET" revels in many eccentricities, and his drawings are too sketchy to be seriously considered.

"KI." Ki's plan is not deep enough. The lending department has not all the book-shelf accommodation that could have been obtained, and the ends of the racks should not be brought up to the attendant's counter. There are no public lavatories nor the possibility of obtaining them. There is insufficient control over the book stores, particularly that on the upper floor. It is decidedly inconvenient for the staff to have to pass through the librarian's room in order to get to their work. There is no great amount of accommodation, and much money is wasted in an over elaborated elevation and richly ornamented interior. The centre of the front is nicely designed and well shown on the detail. There is no reason for the arch of the window opening to penetrate the tympanum. The carving would be vulgar in execution, but the drawing is good.

"VIGILANS" sends a plan which is bad in almost every respect and an elevation which is not much better. He has even forgotten that a cornice requires a corona, and apparently has had very little proper architectural training.

"PACE TUA" enters at the angle, but provides a plan which suggests that a central entrance on the longer side would have been better. He has failed to base his scheme on the diagonal axis. His elevation is absurdly costly and by no means worth considering. The details display painstaking draughtsmanship.

"ANDRONICUS" provides an entirely unsatisfactory lending library, the width of which is utterly insufficient, while he wastes a great deal of useful space in the magazine and reading rooms and places many of his tables against walls. His elevation is the work of an elementary student.

"PHŒNIX" spoils his entrance hall for the sake of obtaining concrete encased stanchions with which to carry his dome. In the length of 12 feet he attempts to get a staircase from his ground floor to his ladies' room on the first floor. The lending department shows the usual defect of the absence of supervision. There are no public lavatories and many awkward corners in the plan, while the elevation is a great deal too expensive. The detail sheets are distinctly inferior.

The internal glass dome is a mistake, as it throws away all the opportunity for internal effect which the outer dome would give.

"P. MAX" seems to know very little about library planning. He forces his ladies and juveniles to come in by a side entrance and makes most of the mistakes of the rest of the competitors. A lot of time has been wasted by showing every brick separately in the detail, the mortar joints being shown with chinese white. Very little architectural knowledge is displayed.

"ST. GEORGE" has too narrow a lending library without supervision of the stacks, while the attendant's counter is projected awkwardly into the hall. The librarian has no control over his staff, and there are no public lavatories though they could be easily obtained. The book store above the work room and mess room would be a very awkward arrangement as shown. The price of 7d. per foot cube is absurd and the elevation bilious in colour. A great deal too much space is devoted to the windows. The details suggest the work of a beginner.

"PLATO" has wasted a great deal of time by submitting an elaborate specification which was not asked for. Except that his book stands do not radiate properly, and that the attendant's counter is brought forward so as to interfere with the passage way, the plan is a sound one. The elevation is commonplace, the windows showing a combination of arcuated construction with trabeated treatment which is unpleasant, though popular just now. Voussoir and key stones ought not to penetrate pediments, even curved ones used as hood mouldings. The drawings are well executed and boldly coloured.

"IONIC" (A) properly radiates his book racks, but spoils a good plan by trying to give too much for the money. Accommodation for fifty readers in the reference library is, for instance, out of all proportion to what would be required. The accommodation for the staff is, on the other hand, inadequate. The elevation is plain and might have good if it had been really well proportioned. As it is, the centre portion, as displayed by the well-drawn detail, is by no means displeasing.

"ORDER" can only reach his magazines through his news room, and his book stacks cannot be supervised. His elevation shows a delicate sense of proportion, which is rare; but there is no reason for its main features, which do not naturally develop from the plan as they should do. The balustrade is ugly, the balusters need to be designed with more care, and the details are inked in with too fine a line.

"TECKTON" brings his staff entrance in line with the main corridor, properly radiates his book stands, and generally provides a sound plan, with ample accommodation, well served and well supervised. Public lavatories could easily be introduced on either side of the entrance, and the elevation is such that the necessary vent pipes would hardly be noticed. There is too much streaky bacon effect about the front, but it is well grouped, well balanced, and not extravagant. The details have been hastily drawn, but display competence and skill.

"GOG" sends a weak set of drawings of little merit; careful examination of the work of other competitors should do him good.

"TYKE" provides a good radiating lending library, but gives too much space to his juvenile room, with its special lending department. It is a good point to get the staff entrance in line with the main corridor. No lavatory accommodation is provided for the public, but there are ample arrangements for the staff. There ought to be direct communication from the lending department. The elevation is weak and the details weaker. The best drawing in this series is a somewhat scratchy perspective which gives promise of better work in the future.

"IONIC" (B) wastes a great deal of space with a grand staircase, and while he provides a good plan, he has failed to cut his coat according to his cloth, and has exceeded the cost considerably. He is one of the few competitors who have placed lavatories on either side of the entrance. The elevation promises well for the future, and the details are well drawn, particularly that of the exterior, though it is only in pencil and colour.

"YOUNGSTER" describes himself very well. He ought never to have entered. Unless he be a perfect novice it would be well for him to reconsider the question of taking up architecture at all, for these drawings show no indication of any ability to follow the profession with success.

"T SQUARE" occupies the whole of his site, and makes the most of it, sending a plan which in many respects is closely allied to that of "Elf," having the same objection in the difficulty of reaching the lead flat over the library. There is no reference room shown, but in a small library like this it is possible to utilise the librarian's room for the purpose; this is of sufficient size and admirably placed, overlooking the special entrances both for juveniles and staff. Few other plans, if any, provide such good lavatory accommodation for the public and so well placed, though probably the men's lavatories would be better entered from the hall or through the time-table ante-room than through the newspaper room. The provision of a space for cycles just inside the main entrance is also valuable.

The proper radiation of the book stacks in the lending department has been attended to in conjunction with wall shelves, the whole of the room being easily supervised by the attendant, and accessible to the borrower.

The staff accommodation if not very large is at least sufficient. The drawings generally are drawn with a good firm line. They are thoroughly workmanlike, and the details are particularly good. The perspective shows that the building is too much cut up for dignity.

"SPES" (A) submits one of the few schemes in which the main entrance is on the narrow frontage. His lending library is much too small and by no means properly arranged. The staff rooms are entirely cut off from the librarian, and it would be impossible to carry a soil pipe from the caretaker's w.c. in accordance with the

usual bye-laws. Ten diameters high is too much for even a Corinthian column. The details are neatly drawn, but neither they nor the elevation display much architectural power.

"FLEUR DE LIS" fails to radiate his lending book stands, but makes good provision for serving his reference library. The provision of notice boards in the entrance is also a good point, but the corners and the porters' dark cupboards ought to have been lighted, and the space used as public lavatories. It is a mistake to place the bookstore so far from the staff offices and staff entrance, devote space on the ground floor to the boiler house, etc., instead of putting it in the basement. The cost has been kept within the limit by reducing the height. Although the work has been priced at 1/- per ft. cube, it would be well to remember that this would not suffice for sculpture. The idea of the elevation is good and shows a power of dealing with a monumental structure which few other competitors exhibit. The details show that study in a good class would be distinctly valuable.

"IAGO" is apparently a beginner. He needs to see a good deal more good work before he attempts to design on his own account.

"Q.E.F." submits a clever plan with a good lending room, having properly radiating stands, a good newspaper room, and an excellent reference room, with a separate counter placed most handily for the attendant. The librarian's room is in the front where it could be most easily reached by both staff and public. There are no w.c.'s and lavatories for the public, but a good house is provided for the librarian or caretaker, though the bedrooms are only reached through the living room.

Unfortunately, the elevation is by no means equal to the plan, and it has been necessary to price it at 9*d*. per ft. cube, in order to get it within the limit. The drawing of the details is poor, and the construction of the lantern in the reference room does not at first sight appear to be too sound.

"LIGHT AND AIR" has adopted a motto which will explain one of the chief characteristics of his scheme. His plan is a good one of the usual type, with a proper radiating lending library from which both the juveniles and the reference room are well served. There are public lavatories for men but not for women. The librarian is so placed that he is reached from the reference room by the public, while his room is perfectly quiet, though his window is somewhat too near to the neighbouring property. It is not very obvious why the central tower should have been introduced except for purposes of effect. The drawings are unusually well drawn, and the details very completely shown while the exterior gains considerably by being illustrated by a thoroughly well drawn sepia perspective. The elevation is suitable though the entrance is a trifle heavy. The price is 10*d*. per ft. cube, and possibly the building might be done within £5,000 if the tower were omitted.

"WHAT'S IN A NAME" groups his whole building round a small octagonal room for his staff, which is placed in the centre of a large octagonal badly lighted entrance hall, having a low dome over it. The arrangement is most eccentric, and cannot be called good.

The elevation is far better than the plan, but much too pretentious. The construction of the dome has evidently not been worked out. The large sheet of details is well drawn and displays architectural taste and knowledge, but would be more suitable for a large public building.

Stabling for a Country House.

Five sets of designs have been received for the prize of the value of £3 3s. offered by Mr. G. E. Bond (Vice-President), for a design for Stabling for a Country House containing the following accommodation:—

Four Stalls, two Loose Boxes, combined Coach House and Garage, for four carriages and a motor car, with the necessary pit, etc.; Harness Room, covered Washing Sheds and Washer's Room, fitted with copper, sink, and corn shoot.

Accommodation in stable yard for manure pit, w.c. and urinal, etc; the drainage to be shown to a definite point.

Living room, scullery, three bedrooms, larder, bath, and usual offices; also hay and corn store.

A level site, about a quarter of an acre in extent, was available, and the total cost of the building was not to exceed £2,000.

Working drawings were required to $\frac{1}{8}$ scale, with a block plan showing drainage to $\frac{1}{16}$ scale, and one sheet of $\frac{1}{2}$ in. details, showing section through one stall. Also a perspective sketch in colour, or black and white.

The prize has been awarded to the author of the design marked "Oak," Mr. Arthur T. Davies, 21, Chadwick Road, Peckham, E.C.

Report on the Drawings.

"OAK" has a good idea of stable requirements, placing both stable and coach house under the control of one man in the harness room. The covered way is correctly placed so that the horses may be got direct into their stable from it, but it is rather absurd to provide a hay-shoot only six inches wide.

The sick box ought to be completely detached to prevent any possibility of infection. The house is most unsatisfactorily carried upon steel work. The plan is good and the arrangements by which the man can get to his horses at night time under cover is distinctly clever as combined with an entrance external to the yard for his family. The elevation is inoffensive but full advantage has not been taken of the opportunity to produce a picturesque group of buildings.

"**EXCELSIOR**" has placed his coach house on one side of the yard and his stable on the other and very little of his yard is open to the air. The best point in the plan is the clear way through the motor garage, but its pit is so wide that the motor would fall into it. The house is unnecessarily large and the living room is not well placed.

The corn and hay shoots discharge most awkwardly into the harness room, which is divided in two by a narrow staircase. This system of shooting the hay and corn into the harness room would result in the clean harness being covered with dust. The elevation is pretentious, but only the half-timber portion is good. The manure pit ought to have been placed externally to the yard wall with emptying arrangements from the back.

"**HOOF-HOOF**" has entered his sick box correctly from the exterior with its store alongside, but the manure pit ought not to be close to it. The coach house is badly placed, separating the loose boxes from the stalls, and the yard is much too narrow. The motor is to be accommodated in the coach house, and this can hardly be considered as in accordance with the conditions where a separate garage was asked for. No provision is made for a chauffeur's work room. The cupboard space in front of coach house, which in any case is not sufficiently wide, is not shown on the perspective. Lifting shutters would be better than doors to the coach house—which remark applies to almost all the schemes.

"**NORTHERNER**" submits an original plan, but his coach house is too far away from the stables. The isolation box is not badly placed except that it is next to the fodder house. The way in which the elevations are *developed* gives quite a false impression. It would have been better to have treated each frontage separately and to have shown a proper roof plan. The window arches are much too shallow, but if properly detailed the building would look well. The resident coachman has no means whatever of reaching his horses at night time without passing right round. No yard is shown, and the covered washing shed is presumably carried on columns, one of which would interfere with the admission of a motor to the garage. The required perspective has not been given.

"**LABOR ET VERITAS**" does not appear to know much about stable planning. He separates his loose boxes from his stalls, opening the former directly into the yard; the horses can only be reached across the open yard way. A coal store seems to be unnecessary. There is a very curious double staircase arrangement for reaching the house, and generally speaking the plan is unskilful. The manure pit ought to be distinct. The groom's room should not form part of the house for the coachman and his family.

THE

Journal

OF

The Society of Architects

FOUNDED 1884. INCORPORATED 1893.

Including Transactions and Architectural Notes.

No. 9. Vol. I.] JULY, 1908. [New Series.

The Society is not, as a body, responsible for the opinions expressed by individual authors and speakers.

An Afternoon at a Lead Works.

The Society paid a visit to the Lead Works of Messrs. Walkers, Parker & Co., at Lambeth, on the afternoon of May 28th, where the members were initiated into the details of the industry in a very interesting and instructive manner.

The party was divided into groups, each under a guide, and some two hours were profitably spent in viewing the various processes of manufacture, including sheet lead and lead pipe rolling, lead casting and shot making.

The shot tower proved a great attraction, and the majority of the party climbed the 300 steps to the lantern, from the balcony of which a magnificent panoramic view of London was obtained.

Opportunity was taken by the President (Mr. E. J. Hamilton) to convey to the Directors the thanks of the Society for their kindness and hospitality; the Manager, in reply, expressed his pleasure at the visit, and the hope that the members would be also able to visit the works at Newcastle and elsewhere.

Visit to Colchester.

An attractive programme had been arranged for the visit to Colchester on June 20th, when the Mayor and other leading residents were to have joined the party, and a very successful visit was anticipated. Unfortunately, owing to so few members being able to get away on that date, the Council had no option but to cancel the arrangement.

The Concrete Institute.

The Concrete Institute has been formed under the Presidency of the Right Hon. the Earl of Plymouth (lately First Commissioner of Works); Sir Wm. Mather, LL.D., Sir Wm. Preece, K.C.B., and Sir Henry Tanner, I.S.O., as Vice-Presidents; Mr. Edwin O. Sachs, F.R.S. Ed., as Chairman of the Executive; Mr. E. P. Wells as Hon. Treasurer, and Mr. Arthur E. Collins as Hon. Secretary.

Concrete in its various forms, both plain and reinforced, is playing a very important part in the civil engineering works and building operations of the country, and the Institute is the outcome of a demand among the professional and industrial interests concerned, to have some centre for discussion, investigation and research work.

The Institute commences with a nucleus of 125 members, and has offices at 1, Waterloo Place, Pall Mall, S.W.

For Members there is at present *no Entrance Fee*. The Members' *Annual Subscription* is One Guinea, payable as from January 1st (in advance). Life Membership is obtainable by compounding the Annual Subscription by a payment of Twenty Guineas. An Entrance Fee may be required of Members joining after list of Members has reached 250.

Donations and Gifts to the Library.

The Hon. Librarian acknowledges with many thanks the receipt of the following donations and gifts to the Library.

BOOKS PRESENTED:—

TITLE.	PRESENTED BY.
Brickwork and Masonry (*Mitchell*) ..	B. T. BATSFORD.
Building Construction (*Rivington*), 4 vols. ..	C. ROWLEY.
Cast-iron House Drainage (*Jensen*) ..	C. ROWLEY.
Dover, England's Gate	W. EMDEN.
Fire Tests with Fire Extinguishers ..	BRITISH FIRE PREVENTION COMMITTEE.
Hand-book of Farm Buildings, Ponds, &c., and their Appurtenances (*Winder*) ..	THOS. WINDER.
Les Travaux Publics	ALBERT E. PRIDMORE.
London County Hall (Final Competition) ..	ALEXANDER KOCH.
Notes on Newark-on-Trent (*Lockton*) ..	H. W. LOCKTON.
Proceedings of the Ontario Association of Architects	THE COUNCIL.
Screens and Galleries in English Churches (*Bond*)	HENRY FROWDE.

BOOKS PURCHASED:—

Landscape Gardening (*Repton*).
Measured Drawings. Liverpool School of Architecture.
Portuguese Architecture (*Watson*).
The Domestic Architecture of England during the Tudor Period. Part I.

Library Catalogue.

Copies of the new catalogue may be obtained of the Secretary, price sixpence each.

The Committee for the Survey of London, its Objects and Methods.

The object of the Committee has been to take up certain areas in London, and in them to register and record with drawings, photographs, and other records, whatever may be deemed to be of historic or æsthetic interest.

The aim is to draw attention to these things. If they are in private hands to get the owner's consent towards their registration ; if under the guardianship of any representative public or semi-public authority, to encourage their maintenance, for public purposes, as national trusts.

A very large and beautiful collection of drawings, photographs, sketches, measured work, etc., has now been compiled by the different active members of the Committee, and is mounted and arranged in great albums according to the parishes of London.

If, again, any piece of work appears to deserve special attention, the Committee seeks, among its members, to arrange for the preparation of a monograph upon the building in question. Seven of these monographs have already appeared, and are in the hands of members of the Committee. They are supplied to all subscribers to the Committee's work of one guinea or over during the year of publication.

The latest monograph is one on Crosby Hall, forming a complete record of this interesting and historic building.

The Committee want a large body of honorary or subscribing members, so that they shall be not only insured against publishing the somewhat costly records they are anxious to issue without loss, but have a good margin over, to carry on the work of preservation and " watching," which is even more important than that of merely recording.

The Society of Architects has shewn its sympathy with the Committee's object by becoming a subscribing member.

The Secretary, Mr. Percy W. Lovell, B.A., A.R.I.B.A., of Parliament Chambers, Great Smith Street, W., will be glad to give further information regarding the scope and objects of the Committee.

Mostly about Leaded Lights.

We have received from Messrs. Morris & Co. (Ruskin House, Ltd.) the first of their " Brown Paper Booklets, which they propose to issue periodically." The first book of the series, mostly about leaded lights, is an artistic and businesslike production, and if, as is promised, each issue be an improvement on its predecessor, the series, when complete, will be worth preserving, and, in the cover supplied for that purpose, will be found not unworthy of a place on the architect's bookshelves.

Eighth International Architects' Congress, Vienna, 1908.

Legal Qualification and Issue of State Diplomas for Architects.

Establishment of "Chambers of Architects."

By LUDWIG BAUMANN, State Architect, Vienna.

THE title of "Architect" is not protected by the State, it is open to anyone. Any architectural draughtsman or anyone in the building trade, such as master builders, carpenters, etc., or any tradesmen connected with the art trades, such as paperhangers, decorators, cabinet makers, gardeners, etc., adopt this title in order to surround themselves with a glamour of technical knowledge and artistic qualification, to mislead and take in the public, and in this way prejudice and debase the status of architects in the most severely felt manner.

The Governments of the various countries, being fully occupied for years past with social and national struggle, fighting for their very position and existence, can find neither time nor opportunity to step in in order to clear, regulate and decide the situation.

The same protection as offered by the State to the medical, legal and engineering professions, by a strictly prescribed course of study and the requisite proofs of having passed examinations, for the preservation of their status, cannot be accorded to the architect, because the qualification for an architect cannot be made dependent on a certain course of study or passing a final examination (diploma).

M. Gaston Trélat (France), in his essay read before the Congress in London, in 1906, states as follows: "The individual would be hampered and influenced in his efforts with reference in an art which comprises so wide a field as architecture, including as it does the whole range of 'public art.' And it is well known that at the present time one so open to development, this 'public art' should tend to exert a perceptible influence on the spirit of the times. Art which, in fact is based on personal labour and individual conception, analogous to a hypothesis in science, must, in accordance with its nature, be exempted from any check to its expansion.

"The application of our art and our calling is dependent upon the personal appreciation which each of us will derive from his work.

"Art can only be served by its being left that liberty which is required by the manifold variety of its exercises.

"This much as to art and the liberty of its exercises. But these, again, are the result of technical abilities, which again depend on an education with a personal training promoted by science. This education necessitates a general instruction

of the students in the lecture room, and the practical training of the individual in the workshop, which can only follow after that knowledge has been acquired.

"Let the States appoint special commissions, which should consist of persons of such exalted mind as to be above suspicion and bias, so as not to be opposed to the national interest. These commissions should examine the value of the course of studies which lead to obtaining a diploma, so that the diploma may be a symbol of these studies, and nothing else. In that case the State would contribute, its part, through the free competition of the various architectural schools, towards enhancing the value of the tests preceding the acquisition of this title. And such State control could not but be approved, seeing the progress it would promote, and which is the only criterion of our achievements in this world. Then, the liberty on which the intellectual vitality and the progress of our civilisation is based, would be esteemed as the greatest possession of the entire community."

There will always be individuals who, by innate abilities, will exhibit eminent qualifications for architectonic creation, who will acquire the requisite technical knowledge by self-education, and who will achieve, by the practical exercise of their abilities, excellent and, under circumstances, exemplary results in architecture. And are these individuals, who have risen by the force of purely artistic sense, to be deprived of the character and title of an architect, simply because they have not passed through the prescribed course of studies and possess a diploma ?

Or are those who, by severe application, have acquired the prescribed amount of knowledge but who do not possess either the talent to design or any sense of form and space, to be considered full-fledged architects, simply because they have obtained a diploma ?

Here, the State, in concert with a counsel of architects, can step in and make the necessary provision for such cases.

The State may step in by reorganising the architectural schools, doing away with superfluous subjects and adjuncts of study, and adding such as are wanting, in this respect the opinion of experienced practical architects should be consulted. A Council of Architects could be formed which, being authorised by the State, would be alone qualified to grant the right of adopting the title of "architect" and the right to practise by being enroled. And this title should only be permitted to the individual while he is exercising his profession *practically* and *independently* of any other.

This condition should constitute the key to the solution of the question of State protection for the title of "architect." If we were to adhere exclusively to the ideal standpoint that the architect is exercising a free art, this title would remain, as before, open to all, and this would gradually lead to the ruin of the whole profession. The State and the public, on account of the lack of technical or artistic

training of the individual who called himself an architect, would have no guarantee that the architectural work he carried out, affording, in its construction, full security against collapse, and both would soon be led to dispense entirely with the co-operation of an architect who is incapable of undertaking any responsibility or guarantee. Art-trade draughtsmen, for one class of work, and master builders and building engineers for another class of work, would very soon take the place hitherto occupied by architects. In this way therefore we should not be working towards the solution we are aiming at.

We must realise that the profession of an architect is perhaps the most difficult and most exalted of all technical and artistic avocations. The architect must be an artist, he must have full command of the entire domain of architecture in order that he may not be carried away by every wave of fashion, and be equal to any task put to him. He must be a constructor, able to design his building with due regard to statics and material, and to direct its execution, and it is just in this word "to direct" that the future position of the architect, his power, his influence, with public authorities, the public, and the workman is centered. The architect must grasp the spirit of his times, he must be a thinker, he must lead the way, as a pioneer of cultured progress, in the solution of his problems; he ought to show, not how they may be solved, but how they ought to be solved in order to be serviceable to progress and modern sentiment. He must have full mastery of the fundamental conditions and requisites of all trades connected with building work, materials and principles of construction.

He is the legal-technical adviser, and, within the compass of the task entrusted to him, the trustee of his client for whom he is building. He places his honour and his whole knowledge and ability at the service of the latter, for an honorarium calculated at a certain percentage on the cost of the building.

He must be a business man, in order to obtain everything as good, and as cheaply as possible, and he must also have legal knowledge in order to protect his client against over-charges and undue prejudice, by seeing that the agreements with the building tradesmen are properly drawn up and take all eventualities into account. Lastly, he must abstain from any speculative or commercial activity connected with the building trade. He must be, exclusively, an architect. And this constitutes a further cardinal point of the question to be solved. As soon as he carries on any other business, he must cease to call himself an architect, even if he would be entitled to do so on the strength of his training.

The right to the title of "Architect" is not to be based on courses of study gone through, or acquired, or imaginary artistic knowledge, it is to be confined to those who are held entitled thereto by the State and by the "council of architects," on proof of technical knowledge and artistic ability, and of the necessary practical

knowledge, it should be a primary requisite that the individual is carrying on exclusively, the avocation of an architect.

Accordingly it is desirable to agitate for the following :—

Fixing the minimum standard of technical knowledge required by the State, and for

Fixing the standard of artistic capacity. (The decision on this point is to be reserved to a "Council of Architects.")

Further, the right to the title of "Architect" there shall be exclusively reserved for those who :—

(1) Submit proof of practical knowledge during a minimum period (a "Council of Architects" to decide in this respect);

(2) Pass an examination (exclusively of architects) conducted by a Council composed of representatives of the State and Architects, upon the passing of which the right to practice is authorized.

(3) Proof of membership of a recognized body of Architects.

At the conclusion of the discussion on this paper, the three requisites were put to the meeting in the form of a resolution and were carried unanimously.

Mr. H. T. A. Chidgey has been elected a Vice-President of The Quantity Surveyors' Association.

Nine local architects submitted designs for the proposed schools at Bridlington, that of Mr. J. Earnshaw under motto "Efficiency" being selected by the Committee. The schools are to be erected at the corner of Pinfold Lane, Martin Road, and will accommodate 700 children.

The design by Mr. W. D. Jenkins has been selected in open competition for a new church at Gorseinon, to seat 600 persons. (Sixteen designs sent in.) The work will proceed at once. The same architect was also successful in a limited competition for a new church at Ammanford, to seat 600 persons. This work will also proceed at once. (Five local and selected architects competed).

An excellent likeness of Mr. G. A. T. Middleton appears in a recent issue of *The Stone Trades Journal*, with a note to the effect that he was born in 1861, and was educated at the Colchester Grammar School and at Felstead. After serving articles at Colchester, he came to London in 1882, and became the first Secretary of The Society of Architects, of which body he is now Vice-President, on its formation in 1884. Simultaneously he commenced practice as an architectural tutor, and subsequently undertook literary work of a technical nature, his principal works being a six-volume quarto on *Modern Buildings*, and text books on *Building Materials, Stresses and Thrusts*, and *Surveying and Surveying Instruments*.

The Registration of Engineers.
Will Ireland lead the way?

Mr. A. R. Galbraith (member) in a communication to *The Surveyor*, says "The engineer, like his *confreres*, the architect and the surveyor, has not yet acquired for himself that legally definite and authoritative position that has been secured by the lawyer and the doctor, and the profession is suffering from a somewhat similar condition of things to that which the medical profession experienced some half century or so ago. Now the panacea for this is comprised within that one word 'Registration,' and until that is accomplished the evils complained of will continue. I know that hosts of objections will be raised to this, but individuals must be prepared to sink their differences for the common weal. Any action that is taken in this wise must be as unanimous and as sweeping as possible. By that I mean that at the commencement the incompetent must be registered with the competent, for very properly Parliament must recognise vested interests, and would no doubt only sanction a Bill on these lines. At first this would be a disadvantage but it cannot be avoided; and time, after the lapse of one or two generations, would remove the difficulty by the elimination of the unfit.

"Some years ago a Bill for Registration was promoted for architects, civil engineers, and surveyors, and at the time so great was the opposition raised, especially by the latter professions, that they were struck out by the then promoters, the Registration Bill Committee. Since then the promoters combined with The Society of Architects, and the Bill in its present form applying to architects only is awaiting its first reading before the House of Commons. The attitude of the Royal Institute of British Architects towards Registration was at first antagonistic, and of late years has been notoriously apathetic, and it was only when the action of architects generally helped by the Society threatened to leave them out of the question that their Registration Committee was formed to dabble with it in their own perfunctory way.

"Adverting to the Engineers' and the Surveyors', the two Institutions affected have been consistently hostile to the principle of Registration, with the result that the evils are being accentuated, and the younger members are feeling the stress of things pretty severely. Sooner or later action will be taken by some junior body, and they will be forced to fall into line. It is strange that these institutions that have done such a great deal of good work, and have thus so far justified their existence, should one and all fail on this one vital thing, and should need such a lot of pressure to get them even to consider it. It is a curious example of the innate conservative individualism of corporate bodies that their altruism is not great enough for them to grapple with and overcome such difficulties. I believe that in the case of the

doctors and surgeons the attitude of the respective colleges concerned was at first very similar, but events have proved how fallacious was their reasoning, for their positions, far from being imperilled as at first thought by Registration, are now more strongly established than ever. It is somewhat extraordinary that the Institution of Civil Engineers of Ireland and the Royal Institute of the Architects of Ireland are not unfavourably inclined towards Registration, and I suggest that that country would be a very good place to initiate such a departure."

The Bristol Society favours Registration.

Mr. H. Dare Bryan, F.R.I.B.A., in his Presidential address says :—" Turning first to the affairs of the R.I.B.A.—the governing body of the profession—probably most of you are aware, and will join with me in regretting, that it was not possible to prepare a practical scheme of Registration, which is the generally-accepted term for the endeavour to close the ranks of the profession once and for all against the continuous entry of unqualified, untrained, and often untrustworthy rivals. As a Society, we have, as you know, declared in favour of Registration, and I see no reason for going back on this decision. Some measure of this kind is, I am confident, the simplest, quickest, and most efficient way of dealing with the many disadvantages under which reputable architects at present labour.

" It is inexplicable to me why the opponents of Registration number such a majority of the ablest men in our profession—men whom we respect on account of their artistic attainments, personal character, and genuine enthusiasm for their art. Such is, however, the regrettable fact, and to this I attribute the present failure of the movement, although I shall be surprised if, in less than a generation, we do not see this long-desired measure an accomplished fact. During the stress of the movement, we Registrationists were twitted with the desire to create a trade union ; but at the Institute Council, where I have on several occasions heard the same meaningless sneer made apropos of other matters, I was pleased to say that the principle of dignified combination on the parts of architects against unfair conditions was warmly defended, both by the present respected President of the Institute, Mr. Collcutt, as well as by Mr. Hare, the senior Vice-President. When able architects like these, who have achieved a high position by their work, speak thus, we need not despair. Believe me, if we are to secure the respect of the authorities and the community, it must be by reasonable combination—combination for the purpose of obtaining, first of all, fair and proper conditions of employment ; secondly, to prevent the art which is our life's work from being vulgarised and brought into contempt by the incompetent and dishonest ; and, thirdly, having secured these, to join together for the advancement of architecture by a more thorough education in, and devotion to, our work. These, I think, are worthy objects, and, if they savour of trade-unionism, then I am a trade-unionist."

"A Statutory Qualification for Architects."

In reviewing the work of the 1906 Architectural Congress, as set out in the "Transactions," *The Builders' Journal* says that the above subject attracted some ably written papers from seven members of the Congress resident in Canada, France (2), Germany, Cork, Tasmania, and Budapest, and a resolution, applying to all countries officially represented at the Congress, and drawn up in the following terms, was adopted:—

"That it is desirable, in the interests of the public and the profession of architecture, that all practitioners should have a statutory qualification."

It would appear that English architects do not stand alone in their demand for education as a necessary means of self-protection, and it is satisfactory to observe that their brethren in other countries agree with them in thinking that the only hope of rescuing the art of architecture from its present, more or less, universally decadent position is for its practitioners to insist upon the adoption of a compulsory and thoroughly comprehensive system of technical and artistic training intended to apply to all persons desirous of becoming members of the profession. Much bitter feeling has been aroused in this country over the harmless proposal to institute a compulsory system of architectural training. We trust that the expression "they manage these things better abroad" can be fairly applied to foreign architects, even to that section of the profession (if there be one) which pins its faith upon the architectural achievements of the "untutored genius."

Agreed on the "Disease," but Divided on the "Cure."

The result obtained by the discussion of the subject seems to indicate a stage in the controversy in which those in favour of statutory qualification and those opposed to it are alike convinced that the public "suffers from the ignorance of unqualified practitioners," but whilst the advocates of statutory qualification desire to alleviate the sufferings of the patient (the public) by placing him under the care of a properly-trained and skilful surgeon (the well-educated architect), those opposed to statutory qualification profess (to say the least, somewhat inconsequently) to see the remedy for his tortures in the education of the patient himself!

Meetings and other Fixtures of the Society.

Session 1907-8.

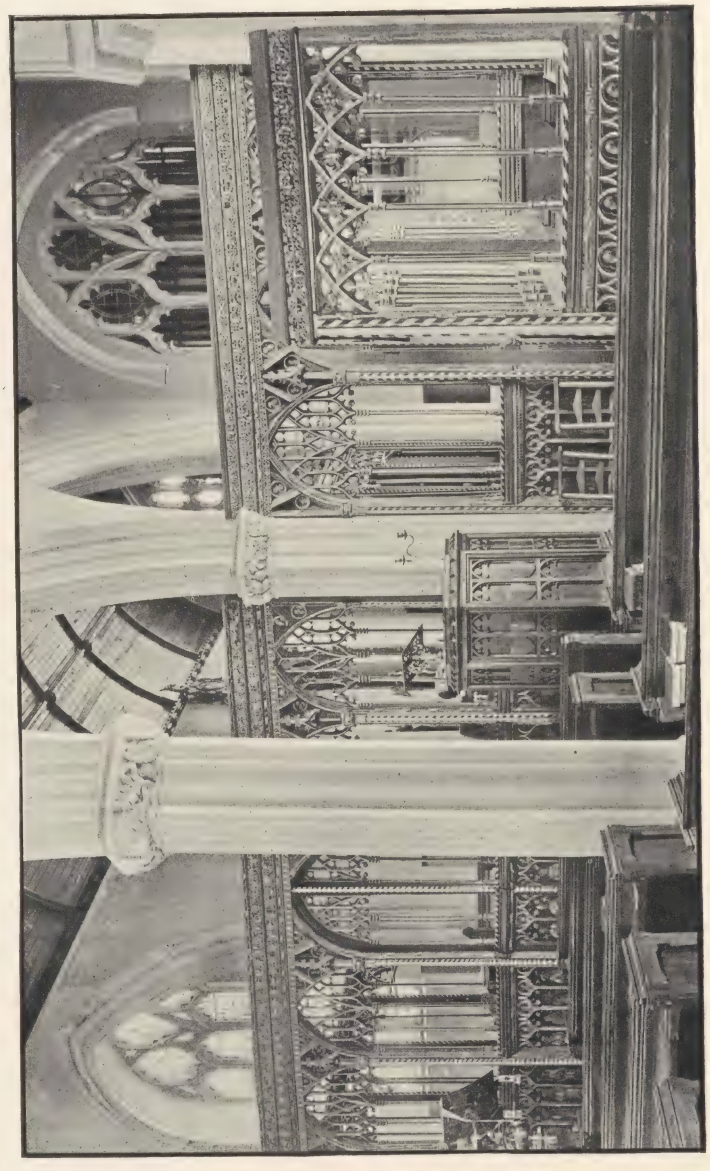
Subject to such alterations and additions as may be announced from time to time in "The Journal" or by circular.

1908.

July 2nd and 3rd. Exhibition of Students' Drawings at the Guildhall, Devonport.

„ 13th to 18th. Royal Sanitary Institute Congress, Cardiff. Delegates from the Society: Messrs. James and Morgan, FF.R.I.B.A.

„ 18th „ 24th. Royal Institute of Public Health Congress, Buxton. Delegate from the Society: Mr. W. R. Bryden, F.R.I.B.A.



Wolborough. Parclose Screens.

(From Mr. Francis Bond's book on Screens and Galleries in English Churches).

Reviews.

The Bibliophile. A Magazine and Review for the Collector, Student and General Reader. London, April, 1908.

It is to be feared that there is not a great opening at the present time for magazines of a high artistic or literary standard. This aspires high, but, so far, has scarcely achieved its ideal, both the literary matter and the illustrations being of unequal merit. This, the second number, for instance, contains some well written articles and some fine reproductions, both in colour and line, of well-known paintings; but the "Bibliofool," with his parody of Gilbert, is out of place, in spite of the cleverness of his production, and Mr. Arthur Marshall's short description of "The Home of the Bibliophile," which begins well, soon descends to the commonplace and becomes little more than a catalogue of the fittings of a comfortable country house designed by the author.

Farm Buildings, Ponds, etc., and their appurtenances. By Thomas Winder, A.M.INST.C.E. (Member). Pawson & Brailsford, Sheffield, and The Country Gentlemen's Association, Ld., London, 1908.

Considering how important an industry agriculture has always been in England, it is to no small degree astonishing that books upon the planning and construction of farm buildings should be rare. It is, in fact, exceedingly difficult to obtain particulars of modern steadings, whether large or small. Consequently, Mr. Winder's little volume will be welcome, not perhaps to many, but, at any rate, to all who practise in country places and are called upon, from time to time, to deal with farm-houses, cowsheds, piggeries, and the other appurtenances of a farm. As he says in his introduction, during recent years public attention has been drawn to the insanitary condition of many of the places from which dairy products emanated; and none too soon, if we may judge from the plans given of some "improved arrangements" of years gone by. An oven sandwiched between two privies and two pigstys would hardly be tolerated now! But it is a far cry from this sort of thing to the most approved modern arrangements, which it is Mr. Winder's object to illustrate and explain. The book is well written and the drawings are clear, while it concludes with an admirable chapter by Mr. J. W. Beauchamp on the application of electricity to Farming and Agriculture.

Screens and Galleries in English Churches. By Francis Bond. Illustrated by 152 photographs and measured drawings. Henry Frowde, Oxford University Press, London, New York, Toronto, and Melbourne.

It is a pleasure to welcome another volume from the pen of one of our honorary members, Mr. Francis Bond, whose reputation as a writer upon Gothic architecture is second to none. Upon the present occasion he has specialized, and has produced a book which is, unquestionably, the most complete which has ever appeared upon its subject. Possibly the most interesting chapter in it is the first, in which he describes the origin of screens in churches; but throughout it is well arranged, carrying the reader on from period to period, tracing the evolutions as they occurred, and referring each change to its cause. Here and there he lightens his pages with little touches of humour, as when he describes the incident of a wedding party being played out of church to the strains of "Onward, Christian soldiers, marching as to *war*"; only, unfortunately, he forgot to verify his question, and has printed "marching" as "onward," which almost seems to suggest that Mr. Bond is more familiar with church screens than with the hymnal. The book is most profusely illustrated by fine half-tone reproductions of photographs, which greatly add to its value; as also do the measured drawings which are collected together at the end, though these last would have been even more valuable if scales had been attached to them. Some of them have been over-reduced, and to this cause it is due that in several instances the figuring has been

rendered almost undecipherable, especially when they have been reproduced from pencil-drawings by the half-tone process.

London County Hall Final Competition (Special Number of *British Competitions*). Edited by Alex. Koch, Architect, Membre Honoraire de la Société des Peintres et Sculpteurs Suisses. *Academy Architecture*, 58, Theobalds Road, London, 1908.

Spoilt by a binding which is covered, back and front, by advertisements, and has all the appearance of that of a manufacturer's catalogue, and by the illustrations being printed upon both sides of flimsy paper, this volume is an entire disappointment. If the best schemes submitted in the most important architectural competition held in England for a generation past were worthy of being brought together and illustrated in book form, they were at the same time worthy of sympathetic treatment. The volume should have been dignified at the very least, and might well have been sumptuous; but this production is deserving of no other epithet than mean, especially when it is compared with the fine portfolio illustrating the competition for the Palace of Peace at the Hague, which was published by a Dutch firm a little while since. It would not be inappropiate to apply to it certain words, with little variation, which the editor himself used in a letter which he addressed to the Members of the London County Council, respecting the selected design, that "it would be an eye-sore. . . ., and for centuries to come a witness of beggarly narrow-mindedness." This letter, however, and the well reasoned editorial criticism of Mr. Knott's design, and, incidentally, of the system of adjudicating by three assessors which was adopted, forms the most valuable part of the book; for the designs are now well known to most of us, who either saw the original drawings when they were exhibited, or have studied the reproductions of them which have appeared since in the various building papers. Generally speaking, if these were collected and bound they would be as useful for reference as the present volume, and in several respects they would be more satisfactory.

Publications of The Society of Architects.

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The Year Book.—Price two shillings, contains particulars of Membership, list of Members and Students, syllabus and copies of past examination papers.

Editorial.—The Editor will be glad to consider short articles, drawings or photographs, for publication, but no payment will be made except by special arrangement, nor will he hold himself responsible for the return of MSS., drawings or photographs.

Advertisements.—All communications respecting advertisements in the Society's publications must be addressed to the Advertisement Manager.

Totnes, Devon. A Beautiful Example of a Stone Screen. Erected in 1459.
(*From Mr. Francis Bond's book on Screens and Galleries in English Churches*).

Garages and Motor Houses.

Mr. C. Harrison Townsend, in an article in *The Inland Architect and News Record*, says an architect's first consideration should be to provide himself with the data of his problem and then to bring to bear upon them his own inventiveness, backed where possible by knowledge of what others have done in the face of similar conditions. In our present case, then, dealing as we are with the home of an automobile, the length, breadth and height of this are the all-determining factors. Cars 16 ft. long are by no means unusual, and this may be taken as a datum.

For giving the car proper attention—oiling, cleaning and light repairs—space should be arranged between it and the walls at each side and at each end. This should be at least 2 ft. 6 in. where a pit is provided, but if the latter does not exist, and the car is raised for under-work, the space should be 3 ft. or 3 ft. 3 in. In the case of several cars standing side by side there need only be 2 ft. 6 in. or 3 ft. between them. So far, then, we have reached the internal size of a one-car house, 21 ft. or 22 ft. 6 in. for the length, and 11 ft. or 12 ft. 6 in. as the width.

The height of the doors should be sufficient to pass in a car with hood up, plus its luggage rail, and, possibly, tires on the roof, or say 9 ft. They should be at least 8 ft. wide in the clear, and may be steel revolving shutters. Or they may be hinged—opening outwards, and preferably under a pent-roof. Sliding doors may be employed—sometimes the most difficult arrangement to provide for.

The walls should either be faced—at all events, to a height of about 4 ft. from the ground—with glazed bricks or lined with tiles or other non-absorbent material. They should have a coved brick or tile at their junction with the floor. Angles to recesses should be rounded, and there should be as few projecting features as possible. Just above the floor level in each external wall should be inserted air gratings. They should, where possible, be placed behind the small radiators.

As regards the floor, in by far the larger number of the garages and motor houses, there is cement laid to a smooth finish and to falls. This is not a very efficient material. The action of the dropped oil on its surface tends to rot and "take the virtue" out of the cement, and granolithic, with its large proportion of stone chips, distinctly offers less opportunity for this. Stone flags, laid on sleeper walls for the advantage of the air space beneath thus obtained, have been used, but they seem to add still further to the risk of the dangerous sparks that may result from the car coming in or going out with a chain or stud anti-skid appliance fixed on the tyres. Some of the new floor compositions, of which so many are being placed on the market, may solve the question.

The drainage should not be underground pipes, but open, half-round channels to avoid the danger of their becoming charged with explosive gas from leakages,

and to allow the lubricating oil, which is apt to drop from a standing car, to be kept from the rubber tyres, upon which it has a highly injurious effect.

The majority of the plans now adopted make provision in the house for an inspection pit. The necessity for this no longer exists in the same measure as a few years back, and there is a growing tendency to dispense with it. Much of the work which used to be done below the car can now be put in hand from above, though there still remains a distinct necessity for seeing to the underside of the chassis. For those who dispense with the pit there are various substitutes in the direction of jacks.

In cases where it is incumbent to make use of the pit, the best size for this is 6 ft. by 3 ft. by 4 ft. 6 in. or 4 ft. 9 in. deep. Its sides should be lined either with glazed bricks or tiles, and it will be found convenient to form in them a recess on each side for tools. Iron ring steps afford access to it. It is all but useless to attempt to ventilate the bottom of the pit, for no up-cast shafts avail with a gas which is heavier than air. A pit may be ventilated by a vent flue taken from the bottom of it and carried up a chimney shaft alongside other flues. An expert strongly advocates the extension of the pit beyond the outer wall of the garage, as tending toward a certain amount of ventilation at all events, and as giving means of escape for the chauffeur, who would otherwise be shut up in a trap in case of fire. The covering of the pit should be a series of wide cover boards, 2 in. thick, with a sunk lift handle to each. They rest on the rebated edge of a 7 in. by 3 in. oak crib laid on the pit side. In one example the cover is of metal, dished to serve as a drip-pan. The floor of the pit should be dished to a grated sump in one corner. It will be found well to lay on the floor coarse sand which should be constantly removed when impregnated and foul, and, of course, the proprietor will see to a liberal provision of drip-pans. In public or large garages the pit is usually of continuous length, so that several cars may be attended to at once. The pit should be provided with a special electric or safety lamp for examining the underside of the car.

It is not of great use placing a skylight, as is sometimes done, above the pit, since the car when standing over the latter naturally blocks out the light. A long low window quite near the floor is a better arrangement by far, and can be made also to help in the ventilation so desirable. A garage should be of fireproof construction, the roof no less than its other portions.

In small and inexpensive buildings this is not always possible, but even then it is very desirable either to cover all exposed timbers with some fire-resistant material.

Exterior to the motor house proper a covered washing space should be provided.

The petrol store is a highly important feature of the garage. Petrol spirit, or petrol, is an extremely volatile spirit, with a specific gravity of 680 degrees, and though its vapor when mixed with eight or ten times its volume of air, forms simply

a rich gas, which will burn without exploding, a large proportion of air, about 17 or 20 to 1, forms a most explosive mixture.

In case of a small garage the spirit would be kept in 2 gallon cans, the store for which should, wherever possible, be at least 20 ft. away from any other building, and should be of fireproof materials, with iron door and its walls provided with ventilators having gauze protection. The floor of concrete, floated with cement, should be sunk below the ground level, and the door should have a raised sill, and the sunk space filled with sand. The cans should be close to the doors in order that they may be easily accessible, and that the chauffeur need never stand inside.

When spirit is kept in bulk to a moderate amount an ordinary galvanized iron tank sunk in the ground may be used, built in with either bricks or concrete, a layer of the latter being laid beneath it. It should have no drain on account of the danger of leakage. A pump in connection with it draws off the spirit. The storage of the larger amount necessary for public garages is usually in large cylinder tanks, which should be buried at least 2 ft. under ground, and be imbedded in Portland cement concrete, say 12 ins. thick, and have a vent pipe of iron (with a fine wire screen near the tank connection) carried some feet above the roof of the garage. It should have a depth-gauge calibrated to read off the amount of petrol in the tank according to the level, and will be connected with a smaller tank by a semi-rotary pump. This, also provided with a gauge, holds about 40 or 50 gallons, and its height is such that it supplies the car by gravitation. The pump house, in which it is usually placed, should have a cement floor 6 inches lower than the door sill, and should be ventilated by an upcast flue of iron or brick carried above the roof and with an open near the floor, but otherwise should have no opening except a fire-resisting door, unless its position is at a considerable distance from any other building.

It is of high importance that there should be no risk of the temperature of the motor house falling to freezing point, and allowing the circulating water of the motor engine to freeze. Its temperature should be about 60 degrees F. The heating apparatus, should have no opening from the motor house, but be arranged with external access, and a low-pressure system with radiators will be found the best. These may be placed as found advisable, but in a garage of any size there will be a considerable advantage if a cupboard be provided containing a small radiator, to be made use of when drying rugs or cushions, and with ventilation to allow of the escape of the resultant steam.

Provision against fire should be attained by means of hydrants, chemical extinguishers—of which there are so many varieties—and by bins containing sand, which is most useful in extinguishing low running fires, since water thrown on burning spirit is of little use; indeed, would increase the danger. In large garages sprinklers should be inserted in the ceiling or roof.

The day-time lighting should be effected by windows which do not admit south sun, and if by skylights these should have the usual studio northern aspect. The Dunlop firm, by the way, recommend as the best light for the tyre store the same yellow light as photographers prefer.

For artificial light there is none obviously that can compare with an electric system. This, however, is not always available, and in that case when either gas or oil is employed the lamps should be on the outside of the windows, through which their light plays into the inside of the house. When electric light is used the plugs should be preferably 4 ft. above the floor, on account of the danger of explosion from a plug-spark. For the same reason there should be no plug in the pit.

Some of the rainwater may well be gathered either into a butt or tank, and will be found valuable for washing purposes. A standpipe should be placed against one or more of the walls, with a screw connection for hose and rose, or for the very useful washing brush, the handle of which carries down to the head a supply of water.

The storage place for tyres, testing apparatus, pumps, and spares should be distinct from that in which cloths, cleaning oil, brushes, waste, etc., are kept on metal-covered shelves, and with proper ventilation. There should be rack or shelf accommodation for rugs, extra cushions, and the like.

The workshop is a feature as to which the owner of the car always has his own views. He may merely wish to have the most simple repairs carried out there, or he may be himself, or else employ as chauffeur, a skillful engineer. In the latter instance, a lathe, a drilling machine, a forge—perhaps an anvil—would be asked for, and if heavy parts have to be dealt with a portable crane, or a differential hoist would be found of much use. When forge or blow-pipe work is done, it should not be in any part of the building directly accessible from the motor house itself. In any case, a full-size work bench will be needed, so placed in front of a window as to be well lighted, and provided with a good vise, preferably of the swivel type. Proper drawers, shelves, and tool racks must be arranged for.

A garage may be built for one of two purposes. It may be meant for some special use, such as housing a number of motor cabs, or omnibuses belonging to one particular company or proprietor, or it may be meant to receive and house cars of various descriptions and sizes placed there for a longer or shorter time by their owners. In the former case what has to be kept in view—and with motor omnibuses especially—is the fact that the vehicles come in and go out in some special rotation or order, and that the earliest to leave in the morning should have facilities for being so stabled that in order to do so they disturb as few as possible of those placed in front of them.

It is highly desirable that there should be few piers, columns or stanchions to

cut up the floor space and interfere with the free disposal of the cars. A roof of steel cantilever principle best serves this purpose.

Most often, however, the site built on is one which to utilize to its utmost it is necessary to design a building of several floors, and a good example of this treatment is the Winton Garage, New York, of which Mr. Charles A. Rich is the architect. This averages 130 ft. by 100 ft., and has four floors each with washing spaces, and with car access obtained by a lift 18 ft. long by 13 ft. wide. Mr. Rich writing about it says, "In regard to planning there are one or two things important to the minds of all automobilists. From the entrance of the building to the turntables should be a direct straight line, as shown on the first floor, and the washstands should be well out of the way in the rear. In this particular garage you will note that there are incoming and outgoing turntables near the elevator. The first floor, possibly better than any other floor, shows the large space unbroken by columns.

"The roof of this building is interesting, as it consists of an open tile floor, flat skylights in the tiles, and a covered piazza around two sides formed by the Italian tiled sloping roof, and the elevator runs up to it. A trying out-run of a circle around the elevator of about 100 ft. is obtained; and under the piazza the men work on the machines in summer in the outdoor air, and protected from the rain. The scheme makes a delightful working place, to say the least."

The turntable is so extremely useful a feature that it is surprising it is not more adopted, even in quite small garages. One important gain it effects is making it possible for the car to go into its house head forward and to come out from it in the same way. This economy of revolution space causes its extra expense to be well worth while.

Another arrangement to this end is that adopted by Messrs. Meyer & Rademaker, architects, in their garage at The Hague. Here the car on entering is run on to a low frame carried by small roller wheels on a pair of lines and conducting it to the garage or the workshop. This whole plan is simple and ingenious.

Visit to Rye and Winchelsea.

It is proposed to organize a visit to Rye and Winchelsea, on Saturday, July 18th, provided a sufficient number of members signify their intention of joining the party. Ladies are specially invited.

The cost from London will probably be about 14*s*., including return fare, lunch, tea and drive. Members joining the party at Rye, and making their own travelling arrangements, will pay about 7*s*.

Further details will be sent to those whose names are received before July 13th.

Correspondence.

To the Editor of "The Journal."

Protection from Lightning.

DEAR SIR,—Mr. Sadgrove is giving me credit for powers I do not possess. The experiments I carried out were really very simple. When one has seen what lightning can do and knows the laws that govern its action, it is easy to reproduce the effects on a small scale. Any case that has occurred could be repeated with models by reproducing the exact conditions, but to produce some of the effects that are reported to have occurred would be as impossible as for lightning to produce them. In carrying out cases to illustrate a lecture one is compelled, however, to keep to those in which proportion is of no account as the models, if made proportionate to the length of spark one could use, would be of too diminutive a size. For instance, one could not show experimentally to an audience of more than one or two at a time what parts of a building are liable to be struck.

That thunderstorms serve a useful purpose in the wonderful scheme of nature is a fact one can scarcely doubt; their sole object is certainly not the providing of employment for lightning conductor makers; but it will, I think, always be beyond man's power to capture lightning discharges and put them to practical uses other than they serve at present, even as tramp dissuaders. The last man who tried to bottle a lightning flash suffered the extreme penalty. It is also beyond the power of man to devise anything that will attract lightning.

My remarks as to views that might appear too revolutionary in the present state of popular knowledge appears calculated to give a wrong impression. It is not the fear of controversy that prevents my putting them forward as practical suggestions at present—this would be easy to meet—but popular prejudice whose armour would be more difficult to pierce. Those views are merely the ones I put forward carried to their logical conclusion. The methods I suggested will give adequate protection against damage by lightning, if properly applied, and for important buildings where expense is not a great consideration, they are, I consider, the best that can be adopted. At present, the general method is the placing of conductors in what appear convenient positions irrespective of the complications of metal that may exist in the buildings and without those little extra connections that result in efficiency, as if there was an impression that the discharges would be attracted to those conductors and be necessarily confined to them. This is merely a chance method, and, though it sometimes succeeds, it often fails. What I advocate is the studying of the problem afforded by the building and the adaptation of the system to meet the requirements of the case. It means concentration of one's attention more to the building than to the conductor. The element of chance is then dependent only on a man's ability to note details, and to discriminate as to their importance. The distinction may not at first sight appear very great, but it is really of the utmost importance.

So far as regards important buildings, therefore, I only advocate the application of real science in place of the haphazard methods too often adopted. But it is not only the important buildings that suffer. In the course of any decade, about 2,500 buildings in this country, that are important only perhaps to the owners and occupiers, are damaged by lightning, great financial loss occurs, and lives are even lost sometimes in the buildings that are struck. Why should such losses occur? Why should protection be available only for the wealthier classes? Simply

because present orthodox methods render safety possible only for those who can afford a considerable outlay. I am confident that the day will come when greater light thrown on the matter will lead to the embodiment of the metals already existing in the buildings as part of the conducting systems, and the cost of protection will, therefore, be so small as to be within the reach of all, but the time is not yet ripe for one to put forward proposals of this kind. Before they would be accepted, knowledge of the subject must be more general, and many of the existing superstitions must be cleared away. It would, I think, be an easy matter to convince architects of the benefit that would result to humanity from such methods, but what would be the result ? Some steeplejack would circularize the architects' clients, offering to test the conductors—the fees are not prohibitive, those quoted being from 5/- upwards—and would condemn them because they were not orthodox ; then the clients would wonder at their architects' ignorance !

In his first suppositious case, Mr. Sadgrove has placed the matter quite correctly ; such cases are of frequent occurrence. Obviously the client should consult his architect before making alterations to his building. But, even if he has been so unwise as to trust to his own want of knowledge, the damage that would result, under ordinary conditions, would be very much less than if there had been no conductor provided, for a part is less than the whole. The second case is, however, not correct. If Mr. A's house was a properly protected one, it would not be possible for anyone in the neighbourhood to do anything (short of actually cutting away Mr. A's conductors) that would cause it to be injured in this way.

If I am not unduly trespassing on your space, I should like to add a few words as to the first part of Mr. Sadgrove's letter. I do not know how others regard the matter, but from my own experience, I can say that, so long as the seats are not so far empty as to cause a depressing effect, a comparatively small audience—not necessarily demonstrative, but composed of men whose faces show that they are keenly interested—is more calculated to bring out the best that is in a lecturer than a very large one. Either this or the fact that the audience was thoroughly at it ease, evidently eager for information, and not attending merely as a matter of routine or courtesy, made this lecture one of the most enjoyable ones, to me, that I have given. Possibly, however, there was also another reason. Seventeen years ago my firm was protecting a church, and I discussed the subject at some length with the architect. He said, he thought I ought to be able to read a paper that would be of interest, and asked if I would give one before his Society if the Council invited me. The result was that I read my first paper on protection from lightning before The Society of Architects, in 1892. In lecturing before your Society again this year, there may possibly have been somewhat of a feeling of coming home again that dispelled the diffidence one usually experiences. At all events, I have reason to be grateful to the late Mr. Hugh Romieu Gough and to The Society of Architects.

91, Leadenhall Street, E.C.,
May, 18*th*, 1908.

I am, yours faithfully,
ALFRED HANDS.

Exhibition of Students' Drawings.

The drawings submitted by Students of the Society in the various competitions held during the present session have been on view during June in London and Cardiff, and are to be exhibited at the Guildhall, Devonport, on July 2nd and 3rd ; afterwards they are due at Birmingham, Gloucester, Manchester, Newcastle and other centres.

The Society of Architects.

Examination, April, 1908.

Section I.—ARCHITECTURE. *Subject b.—ARCHITECTURAL HISTORY.*

WORKED ANSWERS by JAMES BARTLETT, Examiner.

Question 1.—*Explain the meaning of the following terms as applied to architecture and give sketches to illustrate your replies :—antæ, acroteria, guttæ, metophes, stylobate, trachelium, pronaos, triglyph.*

Answer 1.—See sketches herewith.

ANTÆ.—Pilasters placed at the angles of side walls in Roman, and narrow piers used in connection with columns in Greek architecture.

ACROTERIA.—Level tables or pedestals placed on the apex and lower angles of a pediment for the reception of statues or vases.

GUTTÆ.—The small triangular drops or cones in Greek and Roman and Doric cornices.

METOPES.—The square spaces between triglyphs in the Doric frieze. These were either plain or sculptured and the term is occasionally applied to these sculptures.

STYLOBATE.—A series of steps, usually those leading up to a classic temple.

TRACHELIUM.—The neck or space immediately below the capital in the Roman Doric, and other orders.

PRONAOS.—The front portion or vestibule to a temple.

TRIGLYPH.—An ornament of three glyphs or channels used in the Doric frieze.

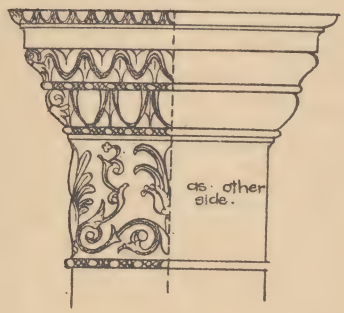
Question 2.—*Dividing the various historical forms of architecture as follows :—* (1) *Trabeated.* (2) *Semicircular arch.* (3) *Pointed arch.* (4) *Renaissance, give a short summary of the times and styles that may be classed under each division.*

Answer 2.

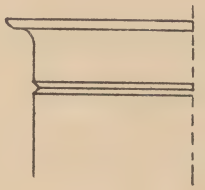
(1) **TRABEATED.**—This form embraces the buildings of the Egyptians, Persians and Greeks, and was at its zenith in Greece during the age of Pericles. This form is sometimes called Columnar.

(2) **SEMICIRCULAR ARCH.**—This form includes buildings in which the arch is used either together with the beam or separately to span the openings, Its use began with the Assyrians and reappeared in the works of the early Etruscans. It embraces the whole of the Roman school, and the two great Church of Christian architecture, founded by the Western and Eastern schools respectively, by the Romanesque and the Byzantine.

(3) **POINTED ARCH.**—This form began with the rise of Mohammedan architecture in the East and embraces all the buildings of Western Europe, from the

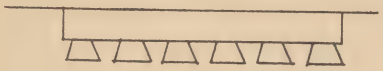


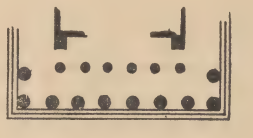
Capital of Antae



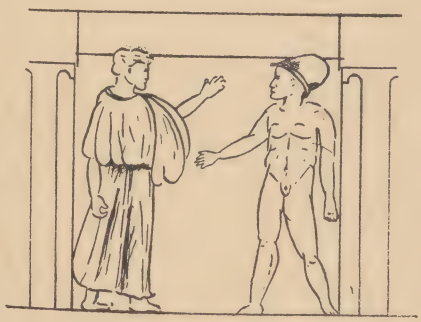
Trachelium

Guttae

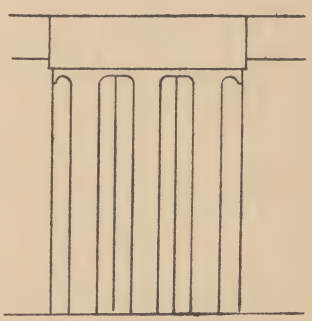




Pronaos



Metope



Triglyph

time of the First Crusade to the revival of art in the 15th century, and comprises what is more commonly known as Gothic architecture.

(4) **RENAISSANCE.**—This form includes the buildings from the 15th century to the present-day, where the details of such are marked by a return to the styles of past ages for the architectural features and ornaments such features and ornaments being marked by that luxury, complexity and ostentation which stamp them as modern. It emanated from Italy, where it was in use about 100 years before its appearance in France and England. In Italy it was divided into three schools, the Florentine, Modern Roman and Venetian.

Question 3.—*Name some of the Roman Aqueducts and give a short description of the "Pont du Gard" at Nîmes, France.*

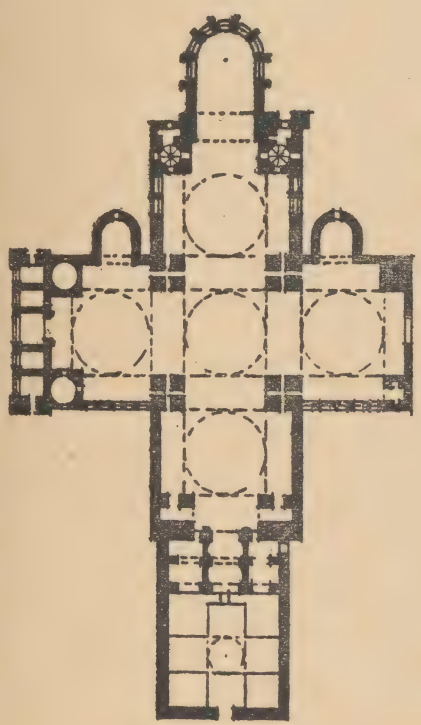
Answer 3.—At the end of the 1st century there were nine aqueducts in Rome, and in the time of Procopius fourteen in use. Of these, the Aqua Claudia, 45 miles long; and the Anio Novus, 62 miles long, were the grandest and most costly, they were constructed about 48 A.D., they were purely works of utility, solidly constructed and without architectural decoration. In Spain, there are the aqueducts of Segovia and Tarragona. In France, the Pont du Gard, built to convey water to the town of Nîmes. Its height above the stream is 180 ft., divided into two tiers of larger arches surmounted by a range of smaller ones, giving the structure the same finish and effect that an entableture and cornice give to a long range of columns.

Question 4.—*Compare shortly and give sketches to illustrate the main points of difference between the churches of Notre Dame du Pont, France, 11th Century, and St. Front Perigueux, France, 12th Century.*

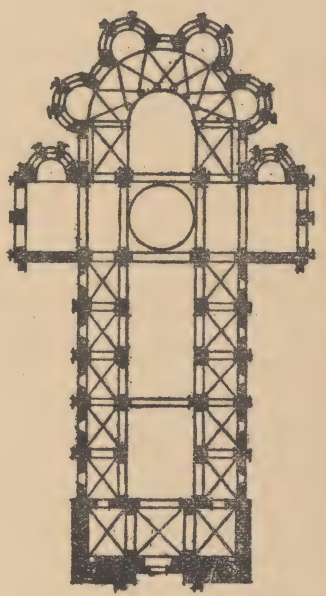
Answer 4.—See comparative plans herewith. The former Church is of the Basilica type, the latter of the Byzantine. Notre Dame du Pont on plan shows how chapels probably of the 11th century were built round an apse of the 10th century, or of an earlier time. In St. Front Perigueux, the plan is that of a Greek cross with naves about 35 ft. in the clear, and roofed by a series of cupolas. In these two Churches the struggle between two great styles is plainly visible. The Southern and Eastern influence strongly felt in some parts of Northern and Western Europe made for cupola vaulting and plans of no great extension. What may be called the Latin influence made for the Basilica form of Church; and the Basilica plan called for vaulting with barrel vaults or groined vaults.

Question 5.—*Write a short description of the Cathedral of Siena.*

Answer 5.—It was commenced in 1243, and the façade 1284, by Giovanni Pisano. This Cathedral is said by Fergusson to be one of the most successful specimens of Italian pointed Gothic. The façade is marked by the black and white stripes which detract somewhat from the effect of the whole. The ground falling towards the



St. Front, Perigeux.



Notre Dame du Pont,
Clermont Ferrand.

east end allows of a crypt being formed under the sanctuary which is used as a baptistery, the details of which are more purely Gothic than the other portions of the building. The dome is hexagonal on plan, 58 ft. in diameter, covering the centre of the Church, and illustrates forcibly the tendency of the Italian architects to adhere to the domical forms of the old Etruscans. The west end consists of three great portals, the arches of which are equal in size, though the centre doorway is larger than those at the sides, above the centre doorway is a large circular window, and the whole is crowned by steep triangular gables. Internally it has round arches giving a mixed Gothic and Romanesque appearance.

Question 6.—*Describe briefly the leading features in Venetian Renaissance Architecture, and name a few well-known examples of the style.*

Answer 6.—This form of architecture is in general of a lighter character than that of the Florentine or Roman schools. The buildings have usually a straight front; the stories defined by an order to each in contrast with the great crowning Florentine cornice. The balconies are a graceful and important feature giving light and shade to the facade. In later work perfection of details is the marked feature of this style, as for instance, in St. Mark's Library.

Examples :—The Doge's Palace, 1486, by Sansovino.
Library of St. Mark, 1536, by Sansovino.
Vendramini Palace, 1481, by Pietro Lombardo.
Church of St. Maria dei Miracoli, 1480, by Pietro Lombardo.
„ S. Maria della Salute, 1632, by Longhena.
„ St. Giorgio Maggiore, 1560, by Palladio.

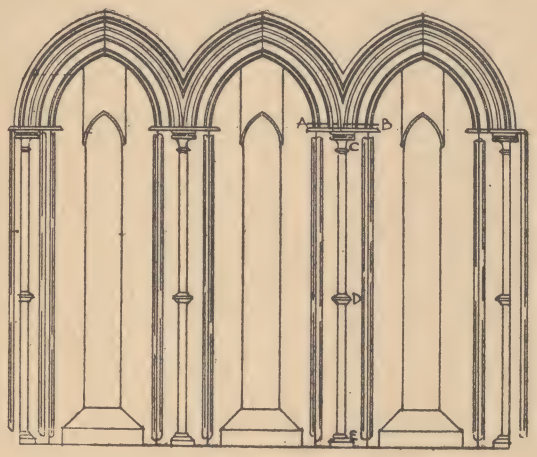
Question 7.—*Give a sketch elevation of a 3-light window in the 13th Century style, also details of the various mouldings, the latter to be large sketches, showing section through head, sill, and plan through jambs and mullions all to the same scale.*

Answer 7.—See illustration.

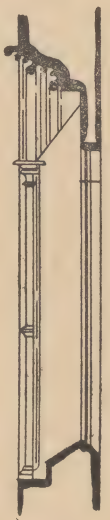
Question 8.—*Name some of the round or polygonal churches contemporary with the Christian Basilicas, and describe shortly some well-known example.*

Answer 8.—Some of these were and remained baptisteries, others like S. Costanza, at Rome, took or kept only the baptistery form. The largest of these round Churches is S. Stefano Rotondo, at Rome, built in the 5th century; it is 210 ft. in diameter. Another, and an excellent example, is S. Maria della Rotonda, a section through the centre of which closely corresponds to a section taken across a Basilica as the centre part rises high above the aisles, and is the nave. As these churches began to be used for other than baptismal services, a separate choir in the form of an apse was added. An octagonal example is the Baptistry of Constantine, the roof of which is supported by a screen of eight columns two stories in height, while another example is that of St. Vitale, Ravenna.

Three · Light · Window
Barnwell · Church
Cambridgeshire



Elevation



Section

Plan

Detail at A·B

Detail · at · C

Detail · at · D

Detail · at · E

Question 9.—*What are the four periods into which Egyptian Architectural History is usually divided? Give dates and names of periods and an example in each.*

Answer 9.

(1) The 4th dynasty, when the Great Pyramids were erected, 3500 to 3000 B.C.

(2) The 12th dynasty, illustrated by the remains at Beni Hassan.

(3) The 18th and 19th dynasty, illustrated by the ruins of Luxor and Karnak.

(4) The Ptolemaic period, illustrated by the remains at Denderhah, Edfou and Philæ.

Question 10.—*State what you know of the works of the following architects, also give dates of their several lives:—Hawksmoor, Sir John Soane, Henry Holland, Nash, A. W. N. Pugin.*

Answer 10.

HAWKSMOOR.—1666-1736. A pupil of Wren, principal works—Churches of St. George's in the East, London; St. George's, Bloomsbury; St. Mary, Woolnoth, Lombard Street, E.C., etc.

SIR JOHN SOANE.—1750-1837. Architect of Old Newgate, and the Dulwich Picture Gallery; Sir John Soane's Museum in Lincoln's Inn Fields was formerly his residence.

HENRY HOLLAND.—1740-1806. Claremont House, Esher; Brook's Club, London; the Vestibule to Dover House, Whitehall, etc.

NASH.—1752-1835. Introduced the age of stucco; Haymarket Theatre, Buckingham Palace, and the laying out of Regent's Park Blocks, etc.

A. W. N. PUGIN.—1812-1852. Many Roman Catholic Churches; St. George's Cathedral, Southwark; St. Augustines, Ramsgate, etc.

Abatement of the Dust Nuisance.

Anything which prevents or minimises the formation of dust must be of interest to architects and building owners. We have had an opportunity of testing the merits of "Dustolio," as applied to wood block flooring in offices, and it certainly appears to fulfil the claim of the Sanitary Floor Company, in the laying of dust, the generally improved sanitary condition of the premises and saving in cost in cleaning. A floor so treated only requires regular sweeping with a hard broom in place of scrubbing, and in large public offices the economy thus effected amounts to a substantial sum.

The Travelling Studentship Competition.

The Successful Competitors.

Mr. William Billington Walton, of 27, Birly Street, Blackpool, the winner of the 1908 Travelling Studentship, was born in 1883, and at the age of 19 was articled to Mr. Herbert Wade, of 27, Birly Street, Blackpool, in whose office he now occupies the position of chief assistant.

The winner has for some time past made a special study of library planning, and the experience which he has gained in other competitions of a similar character as regards design, has stood him in good stead, though up till now he has not met with success.

Mr. Walton was elected a Student of the Society on April 9th, 1908, just in time to qualify as a competitor.

The holder of the Travelling Studentship had a close competitor in Mr. Johannes Thorwaldson Westbye, of 14, Great Ormond Street, W.C., the winner of the Council's special prize of £10. This Student, as his name indicates, is a Norwegian, and after studying architecture at the Art College in Kristiana for some years, came to England in 1905, and entered the office of Mr. John W. Simpson, F.R.I.B.A., of 3, Verulam Buildings, Gray's Inn, W.C., to study English methods and complete his professional training. He has also been a student at the evening classes of King's College.

Mr. Walton has selected Hereford, Gloucester and Worcester as the centres for his three weeks' tour which he commences on July 20th, and Mr. Westbye will make Somersetshire his ground during the first week in August.

It is a curious coincidence that the two successful candidates' surnames commence with the same initial, they are both 25 years of age and were both elected Students of the Society on the same day.

It is also somewhat remarkable that the Travelling Studentship has so far always fallen to a Student elected during the Session in which the Competition has been held.

Design for Stabling for a Country House.

Mr. Arthur T. Davies, the winner of Mr. Bonds' Prize, is nineteen years of age, and is an assistant in the office of Mr. F. J. Fisher, M.S.A., of 14, Queen Street, Cheapside, E.C. Like the other successful competitors, Mr. Davies is a comparatively new Student, having been elected in October, 1907.

The Society of Architects.

Examination, April, 1908.

Section II.—BUILDING CONSTRUCTION AND MATERIALS.

Subject a.—CONSTRUCTION.

WORKED ANSWERS by HENRY ADAMS, M. Inst. C. E., Examiner.

Question 1.—*A trench is to be sunk* 10 *ft. deep and* 3 *ft. wide in a wet clay soil. Show by dimensioned sketches what timbering should be used, and state what other provisions would be necessary to enable the men to work in the trench.*

Answer 1.—See diagram 1. A sump hole would be required at intervals, so that a galvanized iron barge pump can be let down to keep the trench clear of water.

Question 2.—*Show to a scale of* 1½ *in. to* 1 *ft. plans of two courses of a* 1½*-b. wall having Flemish facing and English backing.*

Answer 2.—See diagram 2.

Question 3.—*Draw one quarter full size the elevation of about* 2¼ *sq. ft. of each of three kinds of rubble walling, and state under what circumstances you would use them.*

Answer 3.—See diagram 3. The circumstances under which they should be used are :—

(*a*) For the commonest class of work as fence walls between fields.

(*b*) For better class work as boundary walls to estates.

(*c*) For basement work to buildings with brick super-structure, for engineering work generally, for good boundary walls.

Question 4.—*Draw to a scale of* 3 *in. to* 1 *ft. the section and plan of three lead soakers with stepped cover flashing at the brick gable of a roof covered with duchess slates on close boarding.*

Answer 4.—See diagram 4.

Question 5.—*Draw a section half full size through a head and sill of a swivel folding partition for a school. Also a sketch plan to a scale of* ½ *in. to* 1 *ft.*

Answer 5.—See diagram 5.

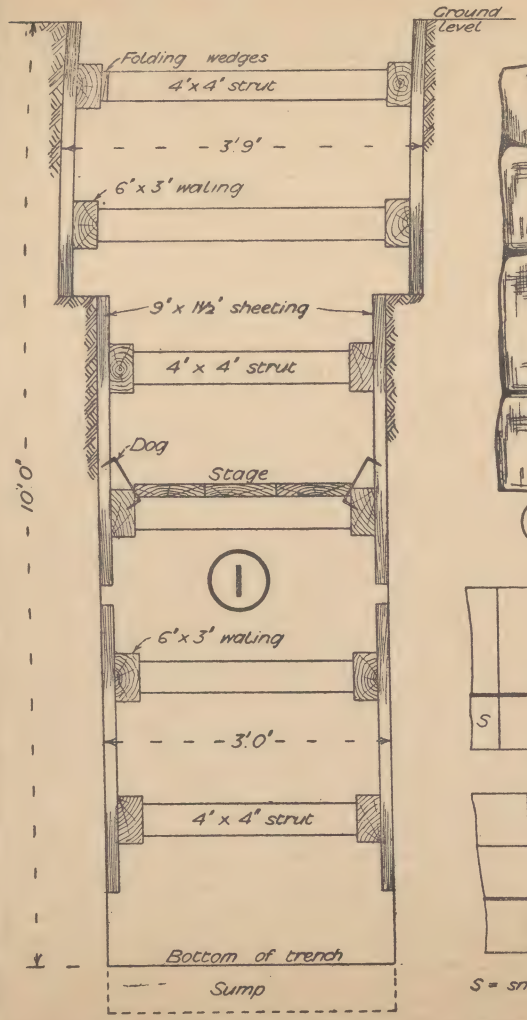
Question 6.—*Sketch neatly a fanlight ventilator hinged at the bottom and opening inwards. Indicate clearly how the opening and closing are effected.*

Answer 6.—See diagram 6.

Question 7.—*Sketch the section and part elevation of a fire-proof cubicle partition, and describe the construction.*

Answer 7.—See diagram 7 showing the partition made by The Fireproof Co., Ltd., York Buildings, Adelphi. For the erection of a cubicle partition, a channel section is fixed to H section uprights, channel section shoes about 4 in. long are placed

BUILDING CONSTRUCTION EXAMINATION APRIL 1908.



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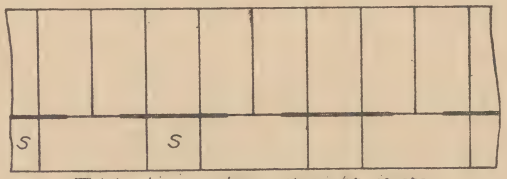
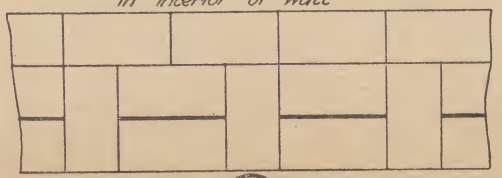
(a) Random rubble uncoursed



Thick lines show straight joints in interior of wall



S = snap-headers

2

3

(b) Random rubble built up in courses

(C) Squared rubble built up in courses

under each upright. The uprights, $1\frac{1}{4}$ in. by $1\frac{1}{4}$ in. by $\frac{1}{8}$ in., or $1\frac{3}{8}$ in. by $1\frac{1}{4}$ in. by $\frac{1}{8}$ in., are cleated to the channel head and are spaced according to the width of the sheeting used. Between the flanges of the uprights are placed the dovetail corrugated sheets with butt joints and clips where necessary. To tie the partition together, hoop-iron bands are employed from upright to upright alternately on either side of the partition, with the ends bent round the flanges of the uprights. The finished thickness when plastered, and suggested capping in dotted lines are indicated in the section.

Question 8.—*Sketch the arrangement you would adopt for a light iron roof truss 20 ft. span, and give details of two of the joints.*

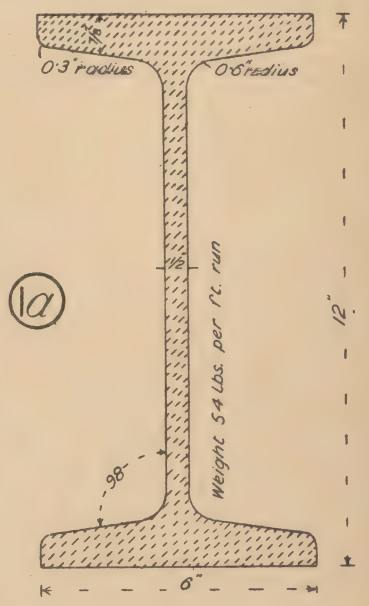
Answer 8.—See diagram 8.

Subject b.—MATERIALS.

Question 1.

(*a*) *Sketch half full size the section of a 12 in. by 6 in. by 54 lb. rolled steel joist, with a mean flange thickness of $\frac{7}{8}$ in. and $\frac{1}{2}$ in. web.*

(*b*) *Name three things for which you would use wrought-iron and three for cast-iron.*



1a

Answer 1.

(*a*) See diagram 1a.

(*b*) Wrought-iron is used chiefly for :—

(1) Tie-rods, bolts, straps, etc.

(2) Light ornamental work, such as brackets, gates, railings, etc.

(3) Tanks and boilers.

Cast-iron is used chiefly for :—

(1) Columns, stanchions, etc.

(2) Drain and rain-water pipes.

(3) Grates and mantels, kitcheners, etc.

Question 2.

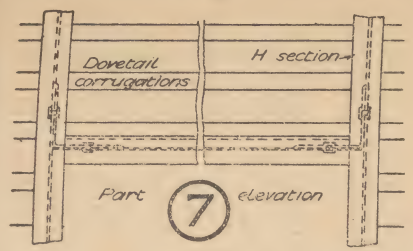
(*a*) *Describe the manufacture of bricks by hand.*

(*b*) *What are the advantages and disadvantages of hand-made bricks?*

Answer 2.

(*a*) The moulds used in hand-moulding bricks are about 10 in. by 5 in. by 3 in. to allow for the contraction of the clay in burning. In some cases the mould rests upon the plain table, in which case the bottom of the brick is flat, or it rests on the "stock board," upon which is a raised projection to form the "frog" of the brick. A clot of clay is taken and dashed into the mould and thoroughly rammed into

BUILDING CONSTRUCTION EXAMINATION APRIL 1908.



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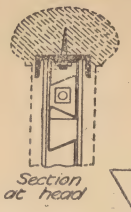

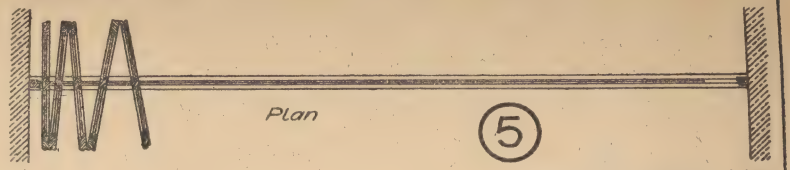

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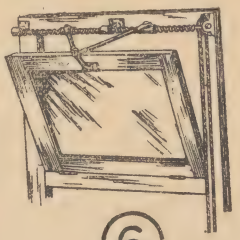

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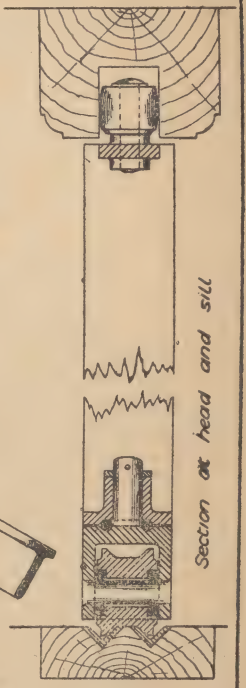

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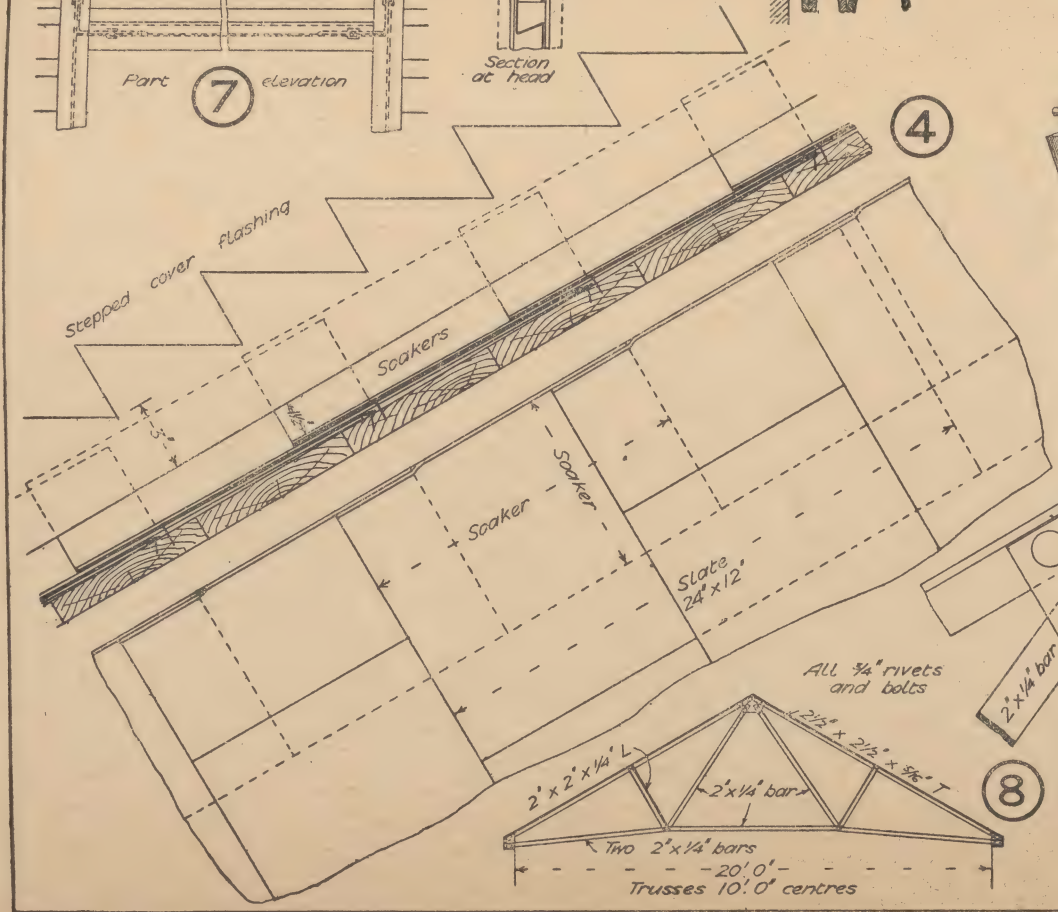

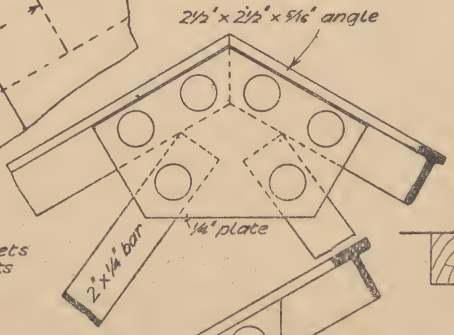

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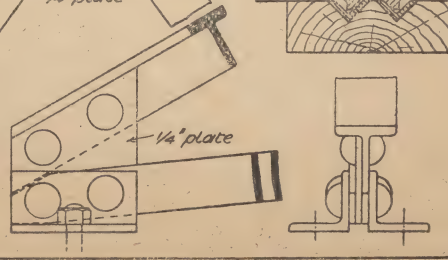

every corner, and then the superfluous clay is scraped off with a strike or straight-edge of wood or steel. When the mould is dipped in water to prevent the bricks sticking, the process is called "Slop-moulding," and if fine sand is used for the same purpose the process is called "Sand-moulding." The bricks are then carried off on a "hack-barrow" to the hack to dry.

If the bricks are to be clamp burnt, they must be thoroughly dried and that process takes from three to six weeks. After that the clamp is built and the raw bricks burnt.

If the bricks are to be kiln burnt they are "scintled," that is stacked diagonally at a little distance apart so that the wind may pass between them, and this operation takes about ten days. They are then placed in the kiln and burnt.

(*b*) The advantages of hand-made bricks are that they can be rubbed better, as in the case of arches, etc., and they are also considered to have a better architectural effect.

The disadvantages are that the bricks are not solidly pressed and are therefore lighter and more porous than machine-made bricks. They may be irregular in shape and the arrises are not so well defined, and they are also more liable to crack in burning.

Question 3.

(*a*) *State what you know of the manufacture of "slag wool."*

(*b*) *Describe some of its uses in building construction.*

Answer 3.

(*a*) Slag wool is made by forcing a blast of steam through falling molten slag, which blows the slag into a light open substance like cotton-wool.

(*b*) It is used for pugging to make floors and partitions sound-proof, and also as a basis to some of the fire-resisting plasters. It is also used for insulating walls of cold storage rooms, and for packing round pipes.

Question 4.—*Fir joists, 8 in. by 2 in., are used 12 in. apart over a span of 14 ft.; calculate the safe external load per foot super, allowing a factor of safety of 7.*

Answer 4.—The formula to use in this case will be $W = \frac{bd^2}{L}$ where W = safe load in cwts. distributed, allowing a factor of safety of 7, b = breadth in inches, d = depth in inches, L = span in feet. Then $\frac{bd^2}{L} = \frac{2 \times 8^2}{14} = 9{\cdot}143$ cwt. distributed over $14 \times \frac{14}{12} = 16{\cdot}3$ sq. ft. $= \frac{9{\cdot}143}{16{\cdot}3} = 0{\cdot}56$ cwt., or 63 lbs. per ft. super.

Examinations for Membership.

Result of the April Examinations.

The Examinations were held from April 14th to 16th, in London and Manchester, when the following satisfied the Examiners :—

Boddy. Percy,	80, Beverston Road, Thornton Heath.
Dicks. Harold E.,	Semington, Cleeve Hill, Cheltenham.
Simmons. Alfred,	4, Allen Road, Wolverhampton.

The following Students obtained certificates of proficiency in the Sections named :—

Section I. ARCHITECTURE (Planning and Design).

Hall. Miss Annie,	9, Imperial Square, Cheltenham,
Keay. Lancelot Herman,	Guildhall, Norwich,
Padgett. James Philip,	County Education Offices, Horsham.

Section II. BUILDING (Construction and Materials).

Oldfield. George Harry Robert,	The Poplars, Berwick Road, Shrewsbury.

Section III. PRACTICE (Specifications, Contracts and Quantities).

Antliff. Norris Slater,	Draycott, Derby,
Grundy. Samuel, Jun.,	Ulverston.
Hall. Miss Annie,	9, Imperial Square, Cheltenham.
Keay. Lancelot Herman,	Guildhall, Norwich.
Oldfield. George Harry Robert,	The Poplars, Berwick Road, Shrewsbury.

Section IV. SANITATION (Ventilation, Drainage, Water Supply, etc.)

Antliff. Norris Slater,	Draycott, Derby.
Hall. Miss Annie,	9, Imperial Square, Cheltenham.

The next examination is in October, 1908, and the new syllabus is now available.

South African Examinations.

Owing to the prevailing depression in South Africa, very few candidates offered themselves for the examination held under the auspices of the Johannesburg Branch last December, and those who did so were unsuccessful.

The Transvaal University have asked for their certificate in Building construction to be accepted in lieu of Section II. of the Society's examination and the request has been granted.

The Architectural Scholarship.

The examinations were held in May in Edinburgh, Manchester and London, and also in Johannesburg. The result will be made known shortly.

The following have had their scholarships renewed for another year :—

H. Fletcher Trew	Gloucester (third year).
G. M. Maddox	Shrewsbury (second year).

Mainly about Members.

We regret to announce the death of MR. R. C. DAVY, of Maidenhead, at the age of 57. He was articled to the late Mr. Charles Cooper, of Maidenhead, and subsequently joined him in partnership. In 1879 Mr. Davy commenced independent practice, and afterwards was in partnership with Mr. Stephen Salter, F.R.I.B.A., of Oxford, but in 1905 there was a dissolution of the partnership, from which time his son, Mr. Clifton Robert Davy, had been associated with him in his practice. Mr. Davy's architectural work has been chiefly of a domestic character, and he has been responsible for the designing of a number of residences in Berks, and in Surrey. Mr. Davy was a well-known Freemason, holding Provincial rank as Senior Grand Warden, and was an accomplished amateur photographer. He joined the Society in 1893.

We have also received notification of the death of an old member, MR. J. SMITHSON MOFFATT, of Whitehaven, last month. He was elected so long ago as 1886, and had been in practice for thirty years, during which time he designed many buildings of all kinds, principally in Cumberland.

The partnership heretofore subsisting between F. RINGS and J. Myers, architects, Railway Approach, London Bridge, S.E., under the style of Rings and Myers, has been dissolved.

At Rackheath, near Norwich, new schools built for the Norfolk Education Committee have been opened. Messrs. LACEY and Upcher, of Upper King Street, Norwich, were the architects.

A church hall is being built in connection with the Lewes Road Congregational Church, Brighton, MR. THOMAS GARRETT is the architect. The total cost of the scheme is estimated at £1,100.

New schools for 600 children are about to be built at Grange Villa, near West Pelton, for the Durham County Education Committee. The architect is MR. STEPHEN PIPER, of Leafield Road, Darlington.

New premises are to be erected for Messrs. Williams Deacon's Bank, Ltd., at the corner of Knifesmith Gate and Cavendish Street, Chesterfield. The architect is MR. W. CECIL JACKSON, Chesterfield.

Under the direction of MR. J. FORSTER, architect, Carlisle, the " Boyle " Natural System of Ventilation, embracing the Latest Patent " Air-Pump " Ventilators, has been applied to the New Schools, Matterdale.

Work has just been begun on the rebuilding of the tower of St. Mary, Overton, and also on the erection of a new baptistery. The work is being carried out under the supervision of Messrs. CANCELLOR & Hill, architects, of Winchester. The scheme is estimated to cost about £2,000.

A new hall has been erected by the various temperance organisations of Bournemouth in the Haviland Road, Boscombe. The building has cost about £2,500, and its main hall provides seating accommodation for about 500 people, while there are a number of smaller rooms. MESSRS. LAWSON & REYNOLDS were the architects.

The New College of Art in Edinburgh, which occupies the site of the old cattle market in Lauriston, is making good progress. The building has a length of 350 ft., with a depth of 130 ft., and is being constructed with red Locharbriggs stone. The total cost will be about £60,000. MR. J. M. DICK-PEDDIE, of Edinburgh, is the architect.

A new parish hall has been commenced at Christchurch, near Newport, Mon., from the plans of Messrs. Prothero, PHILLOTT, & BARNARD, of Cheltenham, which were selected in a recent limited competition. The main hall, 60 ft. by 30 ft., is to be built of local stone, with green slate roof, to harmonise with the church house, an old Tudor building, close by. A kitchen adjoins the hall, and a room is formed under the stage for chairs.

A new church has been erected at Chirk Bank by the members of the United Methodist Free Church at Preesgweene. The building comprises a church and schoolroom, the former being capable of seating 250 persons, and the latter 200. A minister's vestry is also provided, together with the customary out-offices. The whole scheme has been carried out at a total cost of £1,400, the architects being Messrs. Shayler & RIDGE, of Oswestry.

The new house for the headmaster of Peter Symonds' School, Winchester, has just been completed. It is built upon the plans of Messrs. CANCELLOR & Hill, architects. The materials are bricks, with Bath-stone dressings, and the structure stands to the west of the school buildings, presenting the same elevation and details. There will be accommodation for twenty boarders. The dining-hall is 27 ft. by 16 ft., and there are a "common" room for the boys and a sitting-room for the assistant-master. The cost has been £3,000.

A lecture was recently delivered at the Blenheim Club, 12, St. James's Square, by MR. G. A. T. MIDDLETON, A.R.I.B.A., Vice-President of The Society of Architects, under the title of "The Mission of Architecture," in which he skimmed lightly over the whole of the architectural history of Europe, showing how climate, character, religion, and politics had consistently influenced building, and how, in return, the great buildings of the world had assisted to maintain continuity and to hand down to posterity a tradition of the best in generations already passed away.

The foundation-stone has been laid of a secondary school which is to be built on a site of 8½ acres (purchased at a cost of £3,000), off Healdfield road, Castleford. It will accommodate 300 boys and girls (including the pupil-teachers' centre). Mr. W. S. BRAITHWAITE, of Leeds, is the architect. It will be recollected that his design was placed second among 38 sets in the recent competition but was eventually adopted by the West Riding Education Committee and the governors. The tenders have been let for £11,176, Mr. Braithwaite's competition estimate being £11,434, exclusive of architect's commission and equipment.

Of the various designs submitted by invitation for the proposed Carnegie Free Library at Skerries, that of MR. ANTHONY SCOTT, Local Hon. Secretary, 34, Lr. Sackville Street, has been accepted. Mr. Scott, who carried out the architectural details of the Fontenoy Memorial, has been presented with a silver rose bowl of Celtic design by a number of subscribers. In the absence of the Lord Mayor through illness, Mr. Denis Clancy presided, and referred to the services of Mr. Scott in connection with the memorial. In reply, Mr. Scott returned thanks for the compliment paid him. Mr. Joseph N. Briscoe, T.C., said Mr. Scott had carried out the work of the memorial in the most capable manner.

Some years ago the Birmingham Corporation purchased the property on the lower side of Moor Street, extending from the Bull Ring to the Tamworth Arms, for a continuation of the widening of the street, commenced nearly a quarter of a century ago. A company have now taken a building lease of the corner site from the Inge Estate, and have also purchased the adjoining freehold plot in Moor Street from the corporation for the purpose of erecting, from the designs of Messrs. Essex and GOODMAN, architects, a block of commercial buildings. The exterior will be carried out in a Renaissance style, with red brick and grey terra cotta dressings, finished with a parapet and flat roof. The contract has been placed, and the work will be commenced forthwith.

An interesting stage in the development of the Fallings Park Estate on the borders of Wolverhampton was reached when the ceremony of opening the first lot of cottages erected by " Garden Suburb Tenants " was made the occasion of public reference to the importance of well-ordered town planning from the standpoint of health and the general well-being. The cottages were erected from the plans of MR. W. J. OLIVER, architect, of Wolverhampton. This marks the commencement of the quadrangle which has been included in the plan of the suburb. Two pairs of houses will occupy positions at each end. The two end ones erected have every modern convenience, such as hot water baths, two rooms on the ground floor and scullery kitchen, three bedrooms, separate hall and staircase. The premises are fitted throughout with electric light and gas. The middle houses are practically the same size as those just described.

The Undertakers' Journal of February 15th, 1908, contains an excellent likeness of MR. ALBERT C. FREEMAN, the Burial Reformer and Cremation Expert, as he is there styled, who is contributing a series of articles on "The Antiquity of Cremation," in that journal. Mr. Freeman is the author of several works, including *Crematoria in Great Britain and Abroad*, and *The Planning of Poor-Law Buildings and Mortuaries*. He is also the Editor of *The Architects' and Surveyors' Directory*. Mr. Freeman is now contributing to *The Sanitary Record* a series of articles on "The Planning of Fever Hospitals and Disinfecting Stations." The author first turned his attention to the question of reform in disposing of the dead in 1903, and two years later published his first work on the subject. In January, 1906, he delivered a lecture before The Society of Architects on "The Planning of Crematoria," and subsequently gave an address on cremation before a large number of members of the Society, at the City of London Crematorium, Ilford.

After doing service for over 25 years, the Pentyrch School has been superseded by a new structure, which was recently opened by Alderman E. H. Davies, J.P., Pentre (Chairman of the Building and Sites Committee of the Glamorgan Council Education Committee). The new premises are situated on the south side of the Garth Mountain. To floor level the building is brick, and above this, rough stucco. Inside, the walls are lined with a dado of glazed brick, a feature being the band of slate some 2 ft. deep, let in round each classroom, for the purpose of teaching free-arm drawing. Six classrooms combine in providing accommodation for 260, and there is a central hall capable of holding another hundred. Special attention has been paid to ventilation, and besides windows which open top and bottom, each classroom has an open fire-grate with an impure air extractor fitted therein. Heating is done by fires and radiators. The County Council architect, MR. PUGH JONES, designed the building, the cost of which was about £4,500. The Committee has accepted tenders for three new schools, at Llandaff, Dinas Powis and Talbot, and also for a higher elementary school at Pontycwmmer, to cost about £7,800, which is to be the first of a series of these schools to be erected from Mr. D. Pugh Jones' designs.

The new Parish Rooms, Trout Road, Yiewsley and West Drayton, were recently opened by the Bishop of Kensington. The building comprises a large club room, library, kitchen and offices. The hall, which is 30 ft. by 70 ft. is on the ground floor, and has a large platform at one end with an extending front. The floors are fire-resisting throughout and form the first institution of reinforced concrete in these districts. The hall is fully equipped with up-to-date fire appliances and panic exits. The general contractors were Messrs. Try & Hancock, of Cowley and Yiewsley, the constructional steel and ironwork was supplied and fixed by Messrs. G. Aston and Son, London, N., and the floors, reinforced with corrugated bars, etc., by Messrs. Hodkin & Jones, Ltd., of Finsbury Pavement, E.C. The lighting is by electricity and it is heated with gas steam radiators throughout. Ventilation and acoustics have been carefully studied. The total cost was £1,500. MR. A. H. WINTERBURN, High Street, Yiewsley, was the architect, who has also designed the new premises of

the Yiewsley, West Drayton and District Co-operative Society, Limited, recently opened, when the architect presented Mr. F. Lake, who performed the opening ceremony, with a silver key. The shop is 22 ft. by 60 ft. with a public hall over, and is the first instalment of an ambitious development scheme to consist of a row of shops on the ground floor and a large hall and suite of offices over. The floor is of reinforced concrete with wood flooring on deal slips and is fire-resisting, as also are the staircases. The general contractors were Messrs. Try & Hancock, of Cowley and Yiewsley. Gas steam radiators have been adopted for the heating of the building, and the lighting throughout is by electricity. The building cost £1,000 exclusive of furniture and fittings.

The R.I.B.A. Gold Medal.

A French Architect Honoured.

Through the medium of the Royal Institute of British Architects, and to their nominee, His Majesty the King presents every year a Royal Gold Medal in recognition of distinguished services to the art of architecture, either in its practical exercise or in the production of works tending to promote or facilitate the knowledge of architecture. This year the chosen recipient was M. Honoré Daumet, the eminent French architect, and the presentation was recently made at the Rooms of the Institute by Mr. Henry T. Hare, the Vice-President.

In his address the Chairman stated that as art was the common possession of all nations and countries, it was their custom, in selecting the name of the recipient to be submitted to His Majesty, to ignore, on stated occasions, the narrow bounds of our own country and to nominate one of their brethren of foreign nationality who had devoted his life and energies to the art which they loved. In doing so they honoured themselves as well as the recipient, and demonstrated that they were actuated by no narrow or insular prejudice. English architects had drawn much of their inspiration from foreign countries, and if during their long history they had developed definite national characteristics in our architecture they must not altogether ignore the original sources from which much of our architecture was derived. In honouring M. Daumet, they wished to express their sincere appreciation of his great works as an architect, and through him also their admiration for contemporary French architecture. Having given a short resumé of the career of M. Daumet, Mr. Hare said they all admired the Palais de Justice, Paris, as a great and lasting monument, sufficient in itself to establish M. Daumet as a great architect and artist. In becoming one of the select number of those of all nations who wore the Royal Gold Medal, M. Daumet was not by any means the first of his countrymen to receive the honour. Amongst his predecessors were Viollet-le-Duc, Charles Garnier, César Daly, and Auguste Choisy. M. Daumet, having received the Medal, made a graceful reply.

Legal Definition of a "Drain" and a "Sewer."

The Bill to amend the Public Health Acts with respect to sewers and drains which has just been printed, says *The Builders' Journal*, gets rid of that much-debated question in connection with combined drainage as to the definition of a "drain," repairable by the private owner, and a "sewer," repairable by the local authority. The legal cases on this point are as innumerable as they are conflicting, and it is to be hoped that this amendment, or clear definition, of the law on the subject will prevent all further disputes. The matter has been commented on by many of the judges. Mr. Justice Channel, in a recent case, pointed out how extraordinary was the result of this legislation "that the same structure must be repaired by the local authority if it serves the houses of one person only, but that if it serves different owners those different owners may be required to repay the expenses of making it good"; while Lord Alverstone, in 1907, said: "It seems to be ridiculous that, if a pipe which receives the drainage of two or more houses belonging to the same owner is a sewer, it should cease to be a sewer if it also receives the drainage from another house belonging to another owner." The text of the clauses which constitute the amending Bill is as follows:—(1) Where any person desires newly to erect or to rebuild or redrain any pair or group or block of houses, and to provide for the effectual drainage thereof by a combined drain or drains, and shall, before commencing to erect, rebuild, or redrain the same, give notice to the local authority of his intention to provide one or more single private drain or drains for the purpose of draining such pair or group or block of houses into a sewer vested in the local authority, and shall deposit such plans thereof, if any, as may by the by-laws of the local authority be required, and otherwise comply with any by-laws of the local authority relating thereto, every such single private drain when constructed shall be a drain and not a sewer within the meaning of section four of the Public Health Act, 1875. (2) In any urban district the provisions of section 25 of the Public Health Act, 1875, shall be satisfied as regards such pair or group or block of houses as aforesaid by the construction of such private single drain or drains as aforesaid as may appear to the urban authority to be necessary for the effectual drainage of such pair or group or block of houses, provided that the single private drain or drains so constructed shall empty into any sewer which the urban authority is entitled to use, and which is within 100 ft. of some part of the site of such pair or group or block of houses.

The Society of Architects' Lodge.

At the meeting held on May 13th, the Secretary of the Society, Mr, C. McArthur Butler, Senior Warden, was unanimously elected Worshipful Master for the ensuing year, while the Treasurer (Mr. F. J. Eedle), was unanimously re-elected to that office. It was announced that the present occupant of the chair (Mr. Albert E. Pridmore, Past President), had been recommended to Grand Lodge for the honour of "London rank." It was resolved to present Mr. Pridmore with a Past Master's Jewel as a mark of appreciation of his services as the first W.M. of the Lodge. The installation meeting is on November 11th, 1908.

Annual General Meeting.

The Twenty-fourth Annual General Meeting of The Society of Architects, for the Session, 1907-8, will be held at Staple Inn Buildings (South), Holborn, W.C., on Thursday, October 15th, 1908, at 8 p.m.

Agenda :—

1. The Acting-President to take the chair.
2. Minutes of the last Ordinary Meeting.
3. Nominations for Membership.
4. Ballot for the following Candidates.

For Honorary Membership :—

Atherley-Jones. L. A., K.C., M.P.,	Kimberscote, Bray, Berkshire.

For Membership :—

Boddy. Percy Charles,	80, Beverstone Rd., Thornton Heath, Surrey.
Campbell. William Garrett,	Johannesburg and Boksburg, Transvaal.
Corby. Percy Edmund,	15, All Saints Place, Stamford, Lincolnshire.
Dicks. Harold Edward,	Semington Cleeve Hill, Cheltenham.
Farrow. John Wilford Hilbert,	King-Williamstown, Cape Colony.
Gibb. John,	Johannesburg and Boksburg, Transvaal.
Haugham. Charles Frederick Vernon,	P.W. Department, Cape Town.
Pearson. Lawrence Lewis,	142, Norwood Road, West Norwood, S.E.
Rogers. Fergus Carstairs,	Kimberley, South Africa.
Simmons. Alfred,	Glenmore, 41, Allen Road, Wolverhampton.
Wilkins. Victor,	24, Finsbury Square, E.C.

For Studentship :—

Smith. Albert George,	10, Worcester Place, Oxford.
Stephens. Robert,	New Chief Court Buildings, Rangoon.
Waller. Arthur,	879, Bolton Road, Bradford.

5. Council's Annual Report.
6. Election of Officers and Council, 1908-9.
7. Votes of thanks.

THE

Journal

OF

The Society of Architects

FOUNDED 1884. INCORPORATED 1893.

Including Transactions and Architectural Notes.

No. 10. Vol. I.] AUGUST, 1908. [New Series.

The Society is not, as a body, responsible for the opinions expressed by individual authors and speakers.

Preservation of Ancient Monuments in England.

Appointment of a Royal Commission.

Some months ago the Council of The Society of Architects addressed a letter to the Prime Minister, urging the appointment of a Royal Commission to report on the preservation of ancient monuments in England, the Government having previously appointed a similar Commission for Scotland.

This step was taken at the request of Mr. E. J. Horniman, M.P., who had previously elicited a statement from the Chancellor of the Exchequer to the effect that the Prime Minister would be willing to consider representations made to him on the matter.

A few weeks ago in reply to a question from Mr. Horniman, Mr. Asquith said: "It is the intention of the Government to appoint a Royal Commission to report on the preservation of ancient monuments in England." Lord Balcarres asked if a conference could be arranged between the Commissioners for England, Wales, and Scotland, so that an agreement would be arrived at for uniformity of classification, scheduling, etc. Mr. Asquith replied: "I think it is very desirable there should be such a conference, and I will see that the noble lord's suggestion is considered."

Architects' Prospects in Canada.

We have received a communication from Winnipeg, warning members against going to Canada at present. This is one of several, pointing out that the prospects there are not encouraging so far as architects are concerned.

On the Necessity of Calling Public Attention to the Tendency of Increasing the Heights of New Buildings of a presumably Fire-proof Construction.

IN a paper read at the Fire Brigade Officers' Congress at Birmingham, in June last, Mr. A. Pordage, Firemaster of Edinburgh, says the above subject is one which does not receive on the part of communities that consideration which its importance would seemingly justify, but is one which does seriously concern the officials of the Fire Brigades in most large cities I refer, says Mr. Pordage, to the decided tendency which exists for increased elevations of new buildings, and more particularly the introduction during the past few years in this country of the steel-frame building to which the mythical legend " fire-proof " is specially dedicated.

The springing up of the new steel-frame building of mushroom growth during recent years, renders the time opportune to issue a warning note to Municipalities of the dangers to which cities are exposed where the construction of such buildings of abnormal heights is encouraged.

The first query for us to consider is " are these fire-proof buildings fire-proof ? " We have no need to revert to an hypothesis for our answer. The calamitous fires in large American cities during the past few years have provided the world with the most complete object-lesson on the behaviour of the various buildings and building materials when exposed to the ravages of a conflagration, and I propose to take the fire at Baltimore, in 1904, as the one from which we can find circumstances which more closely resemble those we should find in our own cities, namely, a city consisting of many large and important and substantially-built structures of varying dimensions and altitudes, and of various composition comprising the stone building, brick building, the steel-frame building of modest dimensions, and that known as the sky-scraper.

We know that building materials which are not of a combustible nature do not alone render the structure one which will resist the ravages of a fire.

One important factor which is almost entirely ignored by the building community is that no matter of what material the structure may consist, its contents cannot be of the same incombustible nature as the building material. One often hears it said of a building that " the floors are of concrete, the stairs are of stone, and there is therefore nothing to burn. " It is quite impossible to " fire-proof " all the necessities of life with which all buildings are more or less stored, the housing of which is the chief function of every building, it is also not necessary that the building should be of non-combustible construction alone to prevent the stock taking fire. The stock of almost every description has an unhappy knack of taking fire under

whatever circumstances it may be stored. We have no desire to disparage the construction of buildings with non-inflammable materials, but what we do desire is that all buildings should be within a reasonable distance from the ground. The danger of extremely high buildings lies in the fact that fires in the upper floors are quickly communicated from one building to another, and owing to their great height are out of reach of the ordinary equipment of our fire brigades.

The Chief of the New York Fire Department has declared that his department cannot deal with a fire higher than 150 ft. from the ground. In this country we do not claim to deal even with such modest proportions. It is apparent to everybody that if a fire is to be stopped it must be got at at the soonest possible moment. This can only be accomplished if the fire is within reasonable reach of the fire brigade resources. I have no hesitation in saying that the limit of our immediate resources is 60 ft., and even with the aid of modern mechanical ladders 80 ft. may be considered to be the extreme limit of the immediate possibilities of the best equipped fire brigade. The reason being that the first appliances to be brought up and got into operation could not reach the seat of a fire beyond those limits without the assistance of heavier and more complicated appliances which require a longer time to bring up and several men to manipulate them; during these heavier operations the fire has time to increase in intensity in the building of origin, rendering it unapproachable to the firemen, who consequently have to attack it either from the street or adjoining buildings, to which the fire has every opportunity of spreading through windows and other unavoidable openings.

The lessons to be learnt from some of the more recent American fires are that whilst the fire department were successful in extinguishing the fires in the older and less pretentious buildings, and in the lower floors of the sky-scrapers, they were quite unable to reach the fires in the top floors of the latter buildings.

From the investigations made at the instance of the United States Government it was proved that the wave of flame travelling with the direction of the wind entered one side of the taller buildings, passing out at the other, jumped the space over the lower or normal-sized building and thus travelled unimpeded from one tall block to another, in many instances the smaller buildings escaping with but slight damage. It is thus shewn that the so-called "fire-proof" frame building is not only not "fire-proof," but while it is used for storing goods, or as the receptacle for office and domestic furnishings, it really becomes a fire conductor. The important contributing factors to the spread of the fire were the large wall openings filled in with glass and the internal floor openings. The buildings being skeleton in form every advantage is usually taken of the extensive openings for light. This is a most important factor because it is one which is being largely taken advantage of in this country. I have seen frame buildings with absolutely nothing but glass between the piers supporting the upper floors, which it is quite impossible to protect

by shutters or any portable covering. There have always been high buildings in most towns, but the same liberties by way of openings and glass roofs have not been indulged in with the older brick building as with the new innovation.

We have no desire to disparage the value and use of fire preventive materials in building construction, on the contrary it is our duty to encourage them, but it is also our duty to prevent an over-estimation of the value of such construction from becoming an abuse. What we have now to consider is "how to prevent destruction of fire-proof buildings by fire."

As applied to hotel buildings and habitations, these lofty structures are a distinct source of danger to life, as it is quite impossibe for any brigade to bring up life-saving appliances to deal effectively with a large number of people on the top or upper floors. With all the precautions by way of fixed fire-escapes, which the American building laws insist must be introduced in hotel and other such buildings, and with the splendid resources of the American fire brigades, there is seldom a serious fire in American hotel buildings but what is accompanied by loss of life upon the upper floors, owing to the inability of the firemen to reach such extreme elevations. Consequently, we can only view the introduction into this country of such conditions, which are inseparable from this class of building, with much concern. The consequences with us would be even more disastrous because the resources at the disposal of our fire brigades are not nearly so elaborate as those of the American cities.

Taking the structures apart from the contents at the Baltimore fire in 1904, most of the frame buildings which were burned out in so far as the contents and fixtures were concerned, and whose skeleton frames remained, cannot be said to have behaved satisfactory. The top floors which were inaccessible to the fire-fighting appliances acted as fire conductors, their stone and ornamental dressings were stripped by the effects of the heat making the work of the firemen below extremely hazardous. An extract from the Report of the Chief of Engineers of the United States of America, says :—

"The exterior walls of many of the so-called fireproof buildings ought to be taken down, all of them are more seriously damaged than appears."

"Of materials used in exterior walls, properly bonded brickwork was the only thing that was really successful."

"The only successful partitions were brick walls which lost the plaster but were otherwise undamaged."

Nothing can convey more clearly the value of the fire-proof construction in a fire than one of the quotations contained in the conclusions of the Special Committee of the National Fire Protection Association of the United States of America which says :—

"It may be expected that in fires of great severity the steel frame, its protective covering, the walls and floor arches alone will remain and even these will be more or less damaged according to the character of the construction and materials used."

"The contents of a fire-resisting building, without proper subdivision and no adequate protection against exposing fires, are scarcely any safer as regards destruction by fire than if contained in a building of ordinary construction."

These conclusions, arrived at after careful and exhaustive enquiry in the results of the various building constructions, prove conclusively that the tall frame-built fire-proof building is a menace to the commercial centre of any city.

This particular frame construction has received considerable favour from the architectural and building communities in this country because of its having withstood certain tests in the recent great American fires. That is to say the frames of the structures were not consumed, but those which did not collapse in many instances buckled out of the plumb, whilst only the structure of others were intact. But what became of the contents ? The American reports say that in every instance they were wholly destroyed. Considering these facts, it is remarkable for this Congress to note that it is only since the recent great American fires that this class of structure has been pushed ahead in this country. What has already happened in the American cities may happen again in the next conflagration, and may also happen in similarly built areas in this country.

If there is one fact that condemns this particular class of building more than another it is the rapidity with which the fires have spread in the modern-built American cities. In former years the destruction of American towns was due to the timber construction of its buildings, but the remedy in so far as it has been applied to the " fire-proof " building has proved to be worse than the disease.

One disadvantage the frame building is usually subjected to is that of being run up against time, which admits of a greater scope for faulty construction and the introduction of defects which, owing to the delay the undoing and remedying would occasion, are allowed to pass, consequently the building fails in the test which it would otherwise have safely withstood.

The Report of the National Fire Protection Association says, in respect to the checking of the fire at one particular part of the city :—

"The firemen were assisted by a comparatively wide street and to the fact of a solid brick wall as well as fire shutters on windows, which enabled them to save about half of this block."

"A dry goods store at the corner of Lexington and Charles Streets was seriously exposed, but was protected against the worst attack by a solid brick wall on the south."

I think I have shown that the introduction of the steel-frame building into this country is a matter which should not be ignored by the building committees of the various Municipalities. When they exceed the normal dimensions they must be considered as a fire risk, whether the contents be of ordinary or extra-ordinary combustible stock.

Construction of Crematoria.

By C. KILLICK MILLARD, M.D., D.Sc.*

THE number of British crematoria at the present time is thirteen. Five of these, viz., the Hull, Leicester, City of London, Bradford, and Sheffield crematoria are municipal enterprises, whilst those at Woking, Manchester, Glasgow, Liverpool, Darlington, Golders Green, Birmingham, and Leeds (Headingly) belong to private companies or societies. Two other crematoria are, or were, in contemplation, viz., at Harrogate and Hornsey.

Cost of Crematoria.

The cost of erecting a crematorium varies greatly with the style and size of the building desired. The furnace—the only really essential part of a crematorium—costs only a few hundred pounds, and if the furnace be simply placed in an incinerating chamber as an annexe to an existing or contemplated cemetery chapel—as at Leicester and Sheffield—the extra cost involved is comparatively small. If, on the other hand, a separate building is provided, with a fine elevation and interior, and of ample proportions, including a columbarium—as at Bradford or Liverpool, the cost may be anything from £5,000 upwards. The following shows the approximate cost of some of the principal crematoria :—

Ilford, City of London	Total cost of building, including furnace and catafalque (about)	£7,000
Hull	Building (including furnace £422), furniture and fittings ..	2,700
Liverpool	Buildings only	6,100
Bradford	.. .. (about)	5,000
Manchester ..	(Including cost of land, £976)	6,277
Birmingham	.. .. (about)	6,000
Golders Green	.. ..	—
Woking	.. ..	5,000
Leicester	(Extra cost of crematorium only; the total cost of cemetery buildings was £13,830)	2,869

The Arrangement of a Crematorium.†

A complete crematorium comprises :—

(*a*) The Chapel, containing
(*b*) The Catafalque.
(*c*) The Incinerating Chamber, containing
(*d*) The Furnace, or Furnaces and Chimney.
(*e*) The Columbarium.
(*f*) Mortuary.
(*g*) Vestry, Waiting Room, Offices, &c.

(*a*) *The Chapel*, in which the mourners assemble and in which the funeral service is held. As already indicated, it is not essential that a separate chapel be provided for cremation, and if the same chapel can be utilized as is used for earth burial, a

* Abstract of a paper read at the Royal Sanitary Institute Congress, Cardiff, July, 1908.

† For most of the technical details in this paper the author is indebted to Mr. Albert C. Freeman's invaluable work, "*Cremation in Great Britain and Abroad*" (St. Bride's Press, Ltd.).

great economy is effected. All that is necessary is that the catafalque, a table upon which the coffin is placed during the service before being consigned to the flames at the committal sentence, should be so arranged as to be capable of being screened off when not in use. At the Leicester Crematorium, the catafalque is placed in the chancel of one of two adjacent chapels in the Gilroes Cemetery, and when no cremation is taking place curtains are drawn across and both chapels can be used simultaneously for inhumation services.

The style of building selected will, of course, depend upon the views of those responsible, but it is important that the elevation should not be gloomy or forbidding. It ought not to be necessary to go to great expense to avoid this. I would also suggest the desirability of there being nothing in the appearance of a crematorium suggestive of a "heathen temple"—an accusation sometimes brought against crematoria. Where any foundation for this exists it is scarcely calculated to allay religious prejudices.

(*b*) *The Catafalque.*—This being the last resting-place of the hallowed remains of the dead prior to disintegration, it is only fitting that it should be worthy of its object, and it affords an opportunity for some artistic effort. In most crematoria it is the principal feature of the crematorium chapel. At Leicester the catafalque is of carved oak, at Sheffield it is of bronze, and at Bradford and elsewhere of stone. The new catafalque at Woking is of marble and alabaster. After the coffin is once on the catafalque, it ought not to be necessary to subject it to any further handling. The catafalque is usually so placed with regard to the furnace that when the committal sentence is reached it can be silently carried forward by a simple mechanical contrivance, through draped or folding doors into the crematory chamber, and so on into the furnace. No glimpse or suggestion of the latter ought to be possible to the mourners in the chapel.

In the Glasgow Crematorium the coffin is lowered from a central catafalque to the furnace chamber in the basement.

At the Devonport Crematorium, Iowa, U.S.A., the body, after leaving the catafalque, is removed from the coffin and is passed into the furnace in a special steel cradle. This is no doubt an advantage so far as facilitating the process of cremation and reducing the time required, but there is obvious and serious objection from the sentimental point of view.

(*c*) *The Incinerating Chamber.*—The size of this will depend upon the number of furnaces to be installed. At the present stage of cremation probably a single furnace will meet all requirements for some time to come, but it is wise to provide space for a second furnace when required.

(*d*) *The Furnace.*—There are three principal types of furnace in use in this country, viz. (1) The "Simon" type, designed by the late Mr. Henry Simon and made by Messrs. Simon, Limited, of Manchester. This burns coal or coke; (2) The Carbon

Oxide Co.'s coke furnace, recently fixed at Golders Green and Woking Crematoria; and (3) The Toisoul-Fradet Gas Furnace, made by Messrs. Toisoul-Fradet & Co., of Paris, and fixed at Leeds and Bradford.

Several distinct advantages are claimed for the latter, the principal being the cleanliness and convenience of gas as a fuel compared with coal or coke, simplicity and economy of working, and longer life. At Leeds, the average amount of gas consumed for the first 16 cremations was only 6,043 cubic feet, which at 2*s*. 3*d*. per 1,000 cubic feet, only represents a cost for fuel of 13*s*. per cremation.

The following requirements were laid down as being necessary in a satisfactory crematory furnace by the International Congress on Cremation held at Dresden on June 30th, 1876 :—

1. The cremation must be complete without coaly residue.
2. It must be performed only by a special apparatus for the purpose.
3. No gases or vapours which have any smell whatever must be allowed to escape into the air.
4. The ashes must be pure and whitish and easily collected.
5. The incineration should take place in the shortest time possible.
6. The apparatus should be able to cremate rapidly several bodies in succession.

Whichever type of furnace is adopted, it should comply with the above conditions, and it is also necessary that it should be capable of withstanding the strain caused by the alternate expansion and contraction resulting from intermittent use. Some of the earlier furnaces erected failed in this respect. In any case, in estimating the cost of cremation, allowance must be made for wear and tear of the furnace.

As regards the chimney, a great height is not required. Freeman thinks 60 ft. sufficient with any of the existing types of furnace, although the chimneys on some crematoria are rather higher.

It is usual to arrange for a pilot furnace at the foot of the chimney stack, but, although this is sometimes an advantage for starting the draught, it is probably not required for the purpose of a fume cremator, the temperature inside the furnace during a cremation (from 1,500° to 1,800°F.) being quite sufficient to prevent any unconsumed gases escaping.

The chimneys at the Leeds and Bradford Crematoria are concealed inside towers and are invisible. This is certainly a desideratum. A crematorium ought not to suggest, even remotely, an ordinary refuse destructor.

(*e*) *The Columbarium.*—It is usual to make some provision for storing the ashes of the dead, where this is desired. Where a separate building or chamber for this purpose (called a columbarium, from the pigeon-hole appearance of the niches or receptacles,) is not provided, the walls of the chapel may be fitted up with niches as required. This course is being adopted at Leicester, Bradford, and elsewhere. At the Liverpool Crematorium the columbarium is in the basement under the chapel, with direct access from it. The niches should be arranged to hold from 1 to 5 urns,

so that family ashes can, if desired, be stored together. The urns in use for holding the ashes are usually of what is known as the "Box" shape, being 16 in. by 8 in. by 8 in. high.

The fronts of the niches should be closed with slabs of glass, marble, or other material.

Perhaps the finest columbarium in the world is that at San Francisco. It is a separate building from the crematorium, and provision is made for upwards of 4,000 niches.

(*f*) *Mortuary.*—The necessity for a small mortuary in which bodies may remain prior to cremation is obvious, though, as it will only be occasionally required, no great expense over this item need be incurred.

(*g*) *Vestry, Waiting-room, Offices, etc.*—A room for the officiating minister, and a waiting-room for friends and others remaining during the progress of cremation, are also desirable.

Sanitary and Public Health Congresses.

The Society well represented.

At the Twenty-fourth Congress of the Royal Sanitary Institute held at Cardiff, from July 13th to 18th, 1908, the Society was represented as follows:—

OFFICIAL DELEGATES.

MESSRS. JAMES and MORGAN, F.R.I.B.A.

READERS OF PAPERS.

RAYMOND UNWIN.	"Town and Street Planning."
D. PUGH-JONES, F.S.I.	"Country Schools."
R. G. KIRKBY, A.R.I.B.A.	"The Ventilation of Schools."
G. T. FORREST.	"Planning and Hygiene of County Council Schools."

At the Buxton Congress of the Royal Institute of Public Health, July 18th to 24th, the following Members took a prominent part:—

OFFICIAL DELEGATE.

W. R. BRYDEN, F.R.I.B.A.

VICE-PRESIDENTS OF THE CONGRESS.

W. R. BRYDEN, F.R.I.B.A.
A. D. GREATOREX, M.INST.C.E.
H. T. WAKELAM, M.INST.C.E.

READERS OF PAPERS.

MESSRS. BARRY PARKER and RAYMOND UNWIN. "TOWN PLANNING AND HOUSING."

Notes on Hospital Heating.

By C. H. COOPER, M.Inst.C.E.*

The following may be mentioned amongst the methods of heating adopted, viz. :—

1. *Hot Water.*—This, properly applied and where excessive encrustation does not take place, is economical, but its application is limited as—

(*a*) It does not contain available latent heat, so that its range of heating is small.

(*b*) It has to be generated at a level below that of the building to be heated, or pumps must be installed; and—

(*c*) It is difficult to ensure a proper distribution of flow throughout the different buildings.

2. *Steam under High Pressure* was introduced to obviate these objections as far as possible, but the result obtained involved the following loss of heat, viz. :—

(*a*) Leakage in the pipes and fittings due to excessive expansion.

(*b*) It necessitated the introduction of steam traps, in which a large amount of heat is wasted.

(*c*) Excessive radiation.

(*d*) In many cases the condense water is not returned to the boilers, so that the heat it contained is lost.

(*e*) In addition to the loss of heat there is the reduction in the life of the pipes, especially those conveying condense water.

(*f*) Excessive heat in radiators, and the difficulty experienced in regulating same.

3. *Steam at Low Pressure.*—The system that has been adopted for supplying steam at low pressure in this country is that known as the "Vacuum" system, which may be taken to include systems allied thereto. In this system the steam is raised at a pressure required for working engines and for disinfection, etc., whilst that required for heating is passed through a reducing valve in which the pressure is reduced from five pounds per square inch to nil, the flow of steam throughout the system being ensured by a vacuum pump or ejector at the end of such system. This is a much more economical method than that of high pressure steam, and has the further advantages that the

(*a*) Heat in the mains and fittings is not excessive.

(*b*) It almost dispenses with steam traps and the same loss does not occur in those used as in the case of high pressure steam, and

(*c*) It allows of automatic regulation of radiators, which is an important factor.

A system is being introduced which dispenses with the loss due to raising steam under pressure and that due to reducing such pressure. In this system steam is raised at the pressure required for heating, say 5 lbs. per square inch. This, however, necessitates a separate boiler for working the machinery and disinfection. I understand the system is largely in use in Germany, but, so far, I do not know of

*Abstract of a paper read at the Royal Sanitary Institute Congress, Cardiff, July, 1908.

an installation in this country. It has, however, been tried at the Indian Stores, Belvedere Road, S.W., and the results have, I understand, proved so satisfactory that it is to be used when these stores are rebuilt. In the case of Caxton House, which is, perhaps, one of the most economical examples of vacuum heating, it has been found that considerable economy is effected by heating the water required throughout the building in a separate boiler, rather than by raising the temperature of the water where required by calorifiers. This, probably, is due to a large extent to the loss of heat in calorifiers, which is, no doubt, mainly owing to the encrustation that takes place on the water side in the calorifiers.

London County Council New County Hall.

Design Approved.

The report of the Establishment Committee shows that the selected architect has prepared a design for the elevation of the new County Hall, showing the elevations fronting the river and the Westminster Bridge approach. The elevation follows generally the main lines of the design selected by the assessors, and embodies the modifications suggested by them. The central projecting features have been reduced, and the large flights of steps leading from the embankment to the river in front of the central bay are omitted; a slight projecting segmental bay and flight of steps parallel with the embankment being substituted. An attic storey in the centre of the river front has been added. In the discussion on the report, the design was severely criticised. One member is reported to have stated that his boy with a box of bricks could design something as good. It was a box of German bricks with the corners of Newgate. He was told that it was solid. No doubt it was, and it reminded him of a fat old market woman squatting between her baskets. The lobbies, he said, would be dark and dismal, the corridors would require electric light, the rooms would be unhealthy, and would prove breeding places for microbes. All the designs that had been sent in were touched with a sameness, and this he attributed to the fact that in one of the magazines there had appeared an illustration of a perspective of an ideal County Hall by the Council's architect. By that means the competitors learnt the views of one of the assessors, and as they knew that Mr. Norman Shaw and Sir Aston Webb were the other two assessors, the competitors had no difficulty in knowing their views also. Thus it came about that the whole of the designs were affected by the pronounced views of the assessors. The selected design he characterized as a cold Renaissance mongrel style, which London twenty years hence would learn to hate. The plan and elevation were subsequently approved.

The Ventilation of Schools.

By REGINALD G. KIRKBY, A.R.I.B.A., M.S.A.*

WHILST of late years much has been done to improve the curriculum, administration, lighting, cleanliness, etc., of our schools, yet very little progress has been made to improve their ventilation.

Of the many causes which bring about mental fatigue, lassitude, headache, inattention, so often noticeable in children towards the close of the day's studies, there is none perhaps which contributes more to this end than the want of proper ventilation.

By ventilation, we do not mean putting into a building certain appliances either mechanical or otherwise, but the passing through a building of sufficient fresh air to maintain it in a state of purity to the general comfort of the occupants.

The different systems of ventilating schools may be described as follows :—

1. *Natural Systems :—*

(*a*) By means of fresh-air inlets in walls, and in ventilating radiators and stoves fitted with regulating flaps. Foul-air outlet openings in ceilings connected by means of tubes to so-called roof extractors either on the ridge or " concealed."

This system, which appears to be largely adopted, will be known to most of us by its failures and want of system, and thereby want of ventilation.

(*b.*) The open-air system, such as may be found in Germany and at " the Cloisters," Letchworth, where really no ventilation in the ordinary sense takes place. Whilst this building has many advantages from a hygienic point of view, yet I do not think the idea could be adopted for the average school of, say, 300 to 500 scholars without enormous cost, but, at the same time, its possibilities should not be overlooked. The result of this scheme is that sufficiently warm and completely fresh air is supplied to each student without the danger of it becoming vitiated.

(*c.*) Another system, somewhat on the lines of the first one, as regards inlets, and having the foul-air outlets in the ceilings connected to a roof turret by ducts formed of wood framing and plaster.

The turret is fitted with an inner framing, the openings of which are covered with silk cloth flaps which remain closed on the side of the wind, and easily open with the current of air passing through the ducts. An outer framing is fitted in the usual way with louvred openings to protect the inner from the weather. The system has proved successful, but is capable of improvement.

(*d.*) In some cases an iron flue from the heating chamber is placed in an upcast shaft, which draws the vitiated air from the class-rooms by means of ducts with outlets at ceiling and floor levels. The fresh air is warmed by being passed over

* Abstract of a paper read at the Royal Sanitary Institute Congress, at Cardiff, July, 1908.

the Heating Apparatus, and is delivered at about 8 ft. from the floor level. This system is more elaborate and pretentious than most natural systems, but has met with some measure of success.

(*e.*) In the counties of Staffordshire and Derbyshire a new type of school on the Pavilion system has been built to ensure the cross ventilation into the open air of all class-rooms, which appears to be the most natural and successful way of dealing with this question. The tests in these schools, taken by Dr. Reid, shows the air inside to be practically as pure as that outside.

This system of ventilation is by means of hoppers and sash windows on both sides of the room. No appliances of any kind are used, but ventilating radiators are introduced on both sides of the rooms. On the coldest days in winter some of the hoppers are kept open with no discomfort to the scholars. The fresh air inlets provide six or eight times the area usually required by the Board of Education. It has been necessary to slightly increase the heating surface on account of the larger quantity of fresh air admitted. In these schools a system of thorough cross ventilation is obtained, and so a natural system of ventilation exists.

2. *Mechanical Systems :—*

A number of schools have been ventilated on various mechanical systems, but the initial cost and cost of upkeep is too prohibitive for schools excepting in special cases, and could only be used with advantage in large towns where the air is laden with dust and dirt. On this account, and owing to the limited space, these systems have not been dealt with.

There may be some excuse for keeping windows closed where the air is laden with soot and dust or requires moistening, but even then buildings should have their windows made to open. It does not seem natural to teach children to keep windows closed as the ideas learnt at school are carried into the home.

Among the buildings of this class was one recently erected in London for higher educational purposes. Outlets were placed near the ceilings, connected by ducts to a large extracting fan on the roof, and although the fan could be heard working in the rooms below, yet no upward movement of the air was noticed, although it was tested in several ways and in a number of rooms.

The question often arises as to whether schools can be properly ventilated so as to maintain a recognized standard of purity without incurring great expense. The Staffordshire and Derbyshire schools show us that this can be done, for the amount of added impurity in these schools only averaged .23 CO_2 per 1,000 c. ft.

I have purposely avoided going into technical details on points which may be interesting in themselves but may cause us to overlook the more salient points of the question before us.

My object is not to attempt to calculate the velocity of air passing through certain sized openings, or to say whether the CO_2 to be found in class-rooms is

greater at the ceiling or floor level. Whilst I have gathered statistics on these and other interesting points, I have purposely omitted them, and hope rather to show that there is something radically wrong with the ventilation of many of our new schools, and to appeal for an enquiry to ascertain the best means of making them efficient. What I think we want to consider is, how to supply our class-rooms with plenty of fresh air, so as to scour them as often as possible during occupation.

I would suggest :—

(1.) That school teachers be scientifically taught the necessity for keeping the air of the class-room in as pure a state as possible, and the proper use of regulating fresh-air inlets, and the need for opening windows on every possible occasion.

(*a*) For the sake of the children, to enable them to obtain the maximum benefit of the teaching from an educational point of view.

(*b*) For their own sakes, to guard against the lung and throat diseases and excessive death-rate which teachers are liable to. Teachers should understand that fresh air will prevent the spread of disease and growth of organisms which thrive in closed rooms.

(2.) That a standard of purity be required rather than certain fixed rules as to cubical contents. Any amount of space can be had in a room, and yet the air can be as filthy as it is possible for it to be.

(3.) That all class-rooms be so designed that windows or hoppers, etc., be made to open, and so arranged as to thoroughly scour the room in a few minutes, with inlets well distributed. The more inlets there are the less draughts will be felt.

(4.) That qualified inspectors be appointed to examine all schools and to regularly test the air to see that the standard of purity is maintained, and that efficient inlets and outlets are provided and to keep charts of their observations. Such inspectors should be directly under the medical officer for the district. This work should be done by men having a knowledge of school building, and not left to those who have been appointed by virtue of their having previously held some Government appointment in another capacity.

(5.) That the heating arrangements are such that a reasonable temperature shall be maintained without resorting to extraordinary stoking of fires or boilers.

Here, again, too much reliance is put on the heating power of certain makers' fittings claimed by them. It must be remembered that children often come to school in a half-clad condition, and the want of proper heating has led to the closing of all fresh-air inlets which might have been left open had the temperature of the rooms been raised to a state of comfort.

A great deal depends upon the surroundings of a school, and not enough attention is paid to the selection of its site. Committees often choose an unsuitable site, and then invite architects to submit designs, which, at the best from an aspect point of view, have much to be desired. Advice should be taken before the site is chosen,

so as to place the building in a suitable position with as much fresh air around it as possible, and to avoid playgrounds being over-shadowed, etc.

The question of the ventilation of our schools requires the more serious consideration of those who have to look after them. It is only by collaboration with medical experts that architects can expect to arrive at a satisfactory solution of this question, and find the most suitable means of making our school buildings healthy and really efficient; schoolmasters may also be consulted with advantage. It is singular that schools are designed and erected from stereotyped rules without even consulting masters in any way, as so often special requirements, peculiar to the locality, may be entirely overlooked.

It is a well-known fact that persons engaged in outdoor occupation are much stronger in physique than those who follow an indoor vocation; and yet, do we realize that our children are in many cases shut up in unhealthy surroundings, even in our new schools, for so large a period of their lives? The experiments recently made in Germany to provide open-air schools for teaching physically unfit children, and those who are backward (not on account of defective intelligence), points to the necessity of supplying the children with as much fresh air as possible during teaching hours. As yet, however, the difficulty of successfully coping with the requirements during winter time when the snow is on the ground has not been overcome, but the good results show that it is not necessary, even in a climate like ours, to bottle up children in class-rooms, whose air is vitiated, to secure efficient tuition. The reason for this is that we treat fresh air as an unwelcome guest in our homes, and avoid the least draught as likely to bring us all the ills that flesh is heir to.

To-day, hundreds of new schools are being erected in various parts of the country, many of them probably with no real ventilation at all, and in these buildings our children will have to labour under most unhealthy conditions. May I urge for a more natural environment. What we want in our class-rooms is more fresh air; nothing can equal it, and there is plenty of it to be had.

Meetings and other Fixtures of the Society.

Session 1907-8.

Subject to such alterations and additions as may be announced from time to time in "The Journal" or by circular.

1908.

Aug. 3rd. Bank Holiday. Office closed.
Sept. 3rd. Council Meeting. House list, 1908-9.
" 21st. Entries for Membership Examination close.
" 23rd. Entries for Correspondence Classes close.
" 28th. Correspondence Classes commence.
Oct. 1st. Last day for submitting result of Travelling Studentship Tour.
" 6th to 8th. Examination for membership, London and Manchester.
" 15th. Twenty-fourth Annual General Meeting.

Country Schools.

By DAVID PUGH-JONES, F.S.I., M.S.A.*
County Architect (Eastern Division), Glamorganshire.

Planning.

WHICHEVER method of planning is adopted, such as the central hall, the semi-detached hall, or corridor system, the general arrangement should be as simple and direct as possible, with all parts well-lighted and ventilated.

When no hall is provided, folding partitions may be used between the class-rooms, and so obtain a large hall and at the same time reduce the cost per head.

The special advantage of the corridor system is that separate entrances are provided for the rooms. This avoids the objection of having to pass through one class-room to get to another, as is still the case in many old schools.

The Staffordshire Education Committee has adopted a plan without a central hall, with open verandahs between the class-rooms, and a detached or semi-detached drill hall to serve all departments.

Another type of plan has been adopted by the Derbyshire Education Committee with a high corridor and folding partitions. In both types the class-rooms have windows on each side (left and right hand), and are no doubt well lighted and ventilated.

A room should be provided for the teachers and for the medical inspection of scholars.

Class-rooms.

The number and size of class-rooms depends to some extent on the size of the school.

No class-room should accommodate more than 60 scholars, and one to accommodate from 30 to 50 scholars is the best.

A good shape for a room is that approaching a square, with the fireplace on an inner wall facing the scholars at one side, either near the door or near the windows; the latter is best, as this would not compel the teacher to stand in the draught between the window and fireplace. The central part of the wall opposite the scholars should be kept clear for the teacher's use. In Glamorganshire the class-rooms and central hall floors are invariably formed of solid rift sawn wood blocks, on concrete.

A black-board about 21 ins. wide is generally provided round the rooms in upper part of dado, and is made of boards, slate, cement, or plaster painted black, chocolate, or dark green.

A revolving black-board appears to be most suitable for the teacher's use, as it may be fixed at various angles and heights and special matter may be retained on one side while the other side is being used. These are provided in all our new schools.

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* Abstract of a paper read at the Royal Sanitary Institute Congress, Cardiff, July, 1908.

Dual desks are provided for all older scholars, with tables and chairs for the infants.

Cloak-rooms.

Cloak-rooms are placed near the entrances, separate ones being provided for boys, girls and infants. Rails should be at least 4 ft. apart and two tiers in height. From 15 in. to 18 in. should be allowed between the hooks for girls' hats and cloaks, which only means 8 in. to 9 in. hanging space for each scholar, while 9 in. would be sufficient for boys' caps. The fittings should be of iron coated with enamel or aluminium paint, which keeps very clean.

The walls should be faced with glazed brick or tiles to form a dado. The rooms should be well lighted and cross ventilated. Strong wire-netting should be provided in the upper door panels.

The floor may be formed with terrazo cement or tiles.

Sanitary Conveniences, Drainage, &c.

For schools where a public water supply and sewers are available, water closets of a modern type are provided. Children old enough to attend school should be capable of pulling the chain to discharge a flushing cistern, and so separate pedestal closets should be provided and not trough closets. The pedestals should be from 12 in. to 14 in. high, with large water area and a good seal. Closets may be 2 ft. 9 in. wide with a door short at the bottom and at top, and a fanlight over and cross ventilated. The divisions should be 6 ft. high and 3 in. above the floor, and may be of slate slabs with glazed bricks on cement to the walls.

Many schools have no public water supply or sewers within a reasonable distance, and so pail closets, such as Moule's earth closets, have to be used. A good sanitary glazed earthenware pail is now on the market but adds somewhat to the cost. Pails are, I think, better than the standard earth closets designed by the late Mr. Silvanus Trevail and allowed by the Board of Education.

Urinals should be lined with impervious materials, such as glazed bricks, cement, or slate, with channel along the walls, and a perforated flushing pipe fixed about 3 ft. 6 in. high ; slate divisions reaching to the ground are objectionable and difficult to keep clean.

The floors should be formed of impervious material with as few joints as possible. Where no sewer is available the urinals and lavatory wastes may be drained into a water-tight cesspool.

All soil drains are laid on concrete and are well ventilated.

Water Supply.

Many schools have no proper supply of drinking water, and the water has to be collected from roofs or pumped from wells and stored in tanks. Drinking water thus stored should be filtered through such filters as Pasteur Chamberland.

Warming and Ventilation.

The methods in use for heating are the plain grate of the Leamington Bar type. Warm air ventilating grates, warm air stoves, and low and high pressure hot water. The open fireplace is no doubt cheerful and materially assists ventilation. In old schools the grate is set too far back in the wall, and the brickwork set sloping away from the fire. With a heating apparatus, fireplaces may be used for special occasions. Where there is no heating apparatus a warm air ventilating grate, such as Boyd's or Wright's, gives satisfactory results.

Warm air ventilating stoves give out a considerable amount of heat, and should be fixed nearly flush with the wall. To both the warm-air grates and stoves a fresh-air supply flue should be joined.

Nearly all the new schools in Glamorgan are heated by the hot-water low pressure system with pipes and radiators; this is less dangerous and more uniform than the high pressure system. Pipes in channels covered with open gratings should not be allowed. Boilers of the "White Rose" type work very satisfactorily. A minimum heating surface of 16 ft. per 1,000 and 60°F. inside when the temperature is 30°F. outside is always required.

Ventilation is probably the most difficult problem not only for schools but for other buildings.

For small if not for all schools the best system appears to me to be the natural system. An extract flue in the chimney stack is useful, but it is not sufficient. An extractor should be provided in the ceilings, carried out through the roof by means of air-tight shafts connected to a roof or ridge extractors. The ceiling vent is necessary when no cross ventilation is provided and the ceiling covered, but when windows are provided on both sides, as on the Staffordshire and Derbyshire schools, this is not necessary.

Inlets may be provided by having a large portion of the windows to open at both top and bottom. The upper portion should be made to open on centres, and the lower part of at least one of the windows fitted with a hopper about 15 in. to 18 in. high, with glazed hopper cheeks such as the N. A. P. and Hill's, so as to allow the sash to fall on the window-board when necessary, and the lower part of the other windows fitted with sashes in boxed frames. Wall inlets with outer gratings and inner regulating louvre inlets may be provided. The outside grating should be built lower than the inside in order to prevent rain, etc., blowing in, and to direct an upward air current.

Window fittings provided with cords are troublesome, good rod openers being far more satisfactory.

Lighting.

Every part of the school should be well lighted. Class-rooms are best lighted from the left windows which should be well distributed, with the tops reaching as high as possible.

Central halls, if used as an art room, which is often done in higher elementary schools, should have a north aspect.

Windows should have clear glass equal to one-fifth to one-sixth of the floor area.

For artificial light, gas is used, where possible with incandescent burners, or electric light. Many schools, however, have to be lighted by oil lamps. The light should be well distributed over the rooms, but kept more to the left hand of the scholars.

Infants are not taught by artificial light, but a light for the cleaner's use is necessary. 2½ to 3 candle power per scholar appears to be a fair amount, but as most, if not all, artificial light burners deteriorate, particularly incandescent mantles, it is advisable to allow a little margin.

Cost.

The cost of schools vary considerably according to size, area, and suitability of site, distance from railway station, etc.

Schools of the central hall type may cost anything from £12 to £20 per head. Some have in the past cost even more than this, while on the other hand, extensions fitted up to date have recently been carried out at a cost of less than £8 per head.

The cost of additions is sometimes disproportionate to the cost per head on account of the amount expended on work which does not add to the accommodation.

Schools on the corridor system would cost less than the central hall type.

The Secret of Fire-resisting Construction.

Efficient Fire Doors.

The great secret of fire-resisting construction says Mr. A. E. Wells, in a lecture before the Sibley Engineering Club, N.Y., is to avoid openings which will cause drafts and hollow places in walls and partitions. Hollow spaces are apt to conceal waste material of all natures, thrown carelessly or carried into them by rats and mice. Well-holes, elevator shafts, belt-holes and dumb-waiters convert the whole structure into one compartment and act like a chimney in conveying fire from bottom to top of a building. Such openings should be protected by automatic doors or shutters when they cannot be avoided.

Properly installed fire-doors, while in many cases not able to resist a protracted fire, will confine it for some time to the room in which it starts, and every minute gained at the inception of a fire is important. Experience has shown that iron is absolutely unfit for fire-doors. The heat of a slight fire will cause an iron door in many cases to sink of its own weight. The most efficient fire-door is constructed of two thicknesses of 1″ tongued and grooved boards nailed diagonally across each other, and covered both sides and edges with sheets of tin locked together like a tin roof.

Town and Street Planning.

By RAYMOND UNWIN, M.S.A.*

IN town planning, as in architecture, much may be learnt from the past. The history of the art of town planning remains yet to be written, but at any rate we know that it dates back some 5,000 years. Professor Flinders Petrie has related how about that period there was built on a definite plan the ancient town of Cahun, for the accommodation of the workmen engaged in the building of the Egyptian pyramid of Illahun. The streets were laid out in an orderly manner, they were provided with a central gutter or drain, and the workmen's houses built in this town contained four or five rooms each. Town planning on a scale of extraordinary magnificence was carried out by the Greeks, the Romans, the Assyrians and many other ancient races. Not a few towns were planned as a whole in the Middle Ages. The town of Winchelsea in England is an example of one of these, and at the period of the Renaissance and in more modern times much work has been done, particularly in continental towns, in the development of town planning. In Germany there is a considerable literature on the subject, and a monthly periodical, *Der Staedtebau*, dealing with it has been published for several years. It is of the utmost importance that we in England should study this work and should learn to avoid some of the mistakes which have been made in Germany, where in many cases much waste of space and money has been entailed by the adoption of roads of excessive widths and needlessly expensive character. There has too, in Germany, been considerable tendency for town planning to result in the destruction of existing beauty in the older parts of the town, without the creation of any compensating beauty in the newer portions, which have tended to be all drilled into stereotyped forms by ill-considered central regulations.

The First Essential Step.

Before, therefore, any plan for a new town or for a scheme of town development, can with prudence be commenced, a very thorough survey should be made of the whole problem. Professor Geddes in several stimulating essays has pointed out that this survey can hardly be too wide or too thorough. The town which seeks to take in hand and guide its own future development must first thoroughly know itself.

On the sociological side, Seebohm Rowntree's survey of York and Tom Marr's of Manchester may be quoted as good examples. A thorough examination and survey of the whole town should clearly be made, sufficient to enable maps based on the ordnance survey to be prepared, coloured to indicate such matters as the degree of density of population in different portions of the town, and any insanitary areas or areas of special poverty; the distribution of residential, business and

* Abstract of a paper read at the Royal Sanitary Institute Congress, Cardiff, July 1908.

manufacturing areas throughout the town, with such sub-divisions as may seem desirable, and also the distribution of parks, public open spaces and other vacant places, and their extent.

In most towns there exists already much material of the nature of an historical survey, in connection with which there would need to be collected a series of maps showing as far as possible the past development of the town, and also showing all public buildings, ancient monuments or places of historic value, general interest or special beauty, such as should be preserved. For use in comparison and suggestion, plans should also be collected of towns similarly placed, and particulars, as far as available, of town planning work carried out in other countries. Geological maps would be required, also diagrams showing climatic conditions, prevailing winds, rainfall, etc. Further, the survey should include all local traffic conditions, relative intensity of the daily inward and outward flow of population in different directions, the possibilities for extension of railways, tramways, waterways, etc. Particulars of local industries, specially of those which show signs of increasing, with the nature of any special requirements necessary for them, should be collected. All existing water supplies and drainage systems, with the limitations of height or depth to which they are available, and their capacity for increase, should be scheduled together with any marked tendencies of the town to grow in certain directions; while local requirements, customs or prejudices affecting the size and character of building plots, and local conditions as to building materials and traditional methods of building would be of great value. Future requirements in the way of sites for schools or other public buildings, playgrounds, parks, and open spaces, should be foreseen and provided for.

Such then, very shortly summarised, is the city survey which should be made before the plan of any town extension is attempted. None of this information can be dispensed with if a good plan is to be made. On the thoroughness of this survey will depend both the economic success of the plans for future development and the preservation of the city's individual character, by which alone the poetry of its existence can continue to cling to its enlarged self.

We have already sacrificed too much of the individuality of our towns. This has been partly due to the ease of modern long distance transit, which tends to mix up all our building materials in one monotonous jumble spread all over the country. The tiles of the eastern counties invade the slate districts of Wales, while the Welsh slates displace the tiles of Staffordshire or the stone slabs of the Derbyshire village; and in this and other similar ways local characteristics, which arose in old towns from the common use of local building materials and which greatly contributed to produce the individuality of different towns and districts, are being rapidly lost.

In addition to the general survey referred to above, the town planner must himself make a careful study of his site, which should include the preparation of a

contour plan of the whole area to be dealt with, and a careful survey of existing trees or other features of interest or beauty which may be incorporated into the design.

Planning Subservient to Nature.

There is much discussion among town planners as to whether the design should follow formal or informal lines. The subject is too wide a one to be dealt with here. It seems to me that it is, generally speaking, natural for man to carry out his works to a definite and orderly design. In the laying out of land, however, all such designs should be made with due submission to the conditions of the site, and should be inspired by a full appreciation of its suggestions. To commence the work by straightening all the watercourses, levelling the undulations, and clearing away existing trees, in order that there may be prepared a clear field upon which to develop some designer's pet scheme would seem to be presumptuous folly.

What is needed to guide the town planner is not so much a strong prejudice in favour of either formality or informality of treatment, but first, such a respect for his site and for the natural beauty which he may find there as will make him realize the importance of incorporating his design with the site, and so arranging his scheme that it may be the means of harmonizing as far as possible the buildings with the surrounding country; and second, such a clear belief in the beauty of orderly design as will save him from the mistake of imagining that any natural beauty can arise from mere aimless informality. We can forgive the designer who leans rather much to formality of design, as we can forgive the one who too excessively sacrifices his design to the minor features of his site. It is the mere aimless designer, who considers that there is virtue in mere informality, whom we cannot forgive. Time will not permit here of our considering the relative advantages of straight streets and curved streets, and the different kinds of street pictures which can be produced in each; nor the question of enclosed " places " and open " places," of separate street junctions or focal points where many streets meet, of the best ways of managing each to facilitate traffic and to produce good effect; but a great number of such matters must be studied in connection with the town plan. In all large towns special attention should be devoted to the question of traffic, for the solution of the housing problem in our large towns undoubtedly depends on a combined use of cheap transit facilities with the development of garden suburbs or garden cities on the outskirts, or in the near neighbourhood of the towns themselves; and perhaps the most pressing need of the moment is for the arranging and planning of such suburban developments as will effectually relieve the congestion at the centre of our towns.

The Proportion of Houses to Acreage.

Having selected the districts most suitable for development as residential centres and provided the necessary transit facilities by rail, tube or tramway, our first care

must be to limit the number of houses to the acre which may be built in these suburbs. The experience of Letchworth, Hampstead, Earswick and Bournville all teaches that probably twelve cottages to the acre is about the right number for suburban districts. This gives a sufficiently large garden to be worth while cultivating, and not more than can be easily managed by an ordinary family without outside help. It affords ample ground for play places for children, bowling greens or tennis lawns for the elders, in addition to the garden plots. Whatever means we take for limiting the number of houses to the acre the rules must be of a flexible character to allow of varying the size of garden to the individual houses, and of the devotion of portions of the land for the purposes mentioned above. In places where it may be found that any considerable number of tenants are not able or willing to cultivate the whole of their one-twelfth of an acre, the gardens may be reduced in size, and the land thus set free may be devoted to allotments or greens. Considering that building by-laws commonly allow from forty to sixty houses to be built on an acre, and in all these measurements I am excluding the roads, twelve to the acre may be regarded in some places as a counsel of perfection; and perhaps where sites are at all near to the centres of towns a rather larger number of houses may be permitted. But when the number exceeds twenty to the acre undue crowding undoubtedly commences. It becomes necessary either to reduce the length of the gardens and the space between the backs of the buildings to an unpleasing and unwholesome extent, or, what is more commonly done, to curtail the length of the frontage allowed to each house until the long straggling back projections, which are the curse of our modern suburban cottages, are rendered necessary. These projections, which are uncontrolled by our present by-laws, are simply re-creating in another form what are virtually back-to-back cottages opening upon narrow blind alleys, sometimes not more than 10 or 15 ft. wide, into which little fresh air and less sunlight can ever penetrate. If the number of houses to the acre can be reduced to something between ten and twenty it will at once become possible to give reasonable frontage for each house. It will become possible to so plan the sites that not only shall there be ample air space for every house, but there shall also be abundant sunshine into all the important rooms of every house, and a cheerful and pleasant outlook over some green or garden space from all the windows.

The Width of Roads.

But, if this Garden City type of development of the suburbs is to be practicable, we must reconsider our ideas as to roads. The present custom is to fix a minimum width of from 40 to 50 ft., and to require that all the roads within a given local government district shall be macadamized, kerbed, channelled, and asphalted to one specification, regardless of whether they are main roads, which will some day require to be widened at great expense to the public to provide space for tramway lines, or whether they are simply building roads giving access to a few cottages. A

simple carriage drive of from 13 to 16 ft. in width is found ample for all the traffic that passes to and from a great mansion, such as Chatsworth or Blenheim, and no temptation would induce the owners of such a mansion to make one of our by-law roads leading up to their home. Why then may not a simple well kept carriage drive give all the access that is required to a dozen or two cottages, the traffic to which would be as nothing compared with that which passes to and from the great mansion. Instead of a dreary space 40 or 50 ft. wide accumulating dust and radiating heat, we might have in front of our cottages a broad space of grass planted with trees, and a simple carriage way giving access to them. This would very greatly reduce the expense of road-making, and would in turn enable those who are laying out the land to give greater length of frontage to each cottage.

Donations and Gifts to the Library.

The Hon. Librarian acknowledges with many thanks the receipt of the following donations and gifts to the Library.

BOOKS PURCHASED:—

Carpentry and Joinery (*Fletcher*).
Modern Practical Carpentry (*Ellis*).
Open Timber Roofs (*Brandon*).

Library Catalogue.

Copies of the new catalogue may be obtained of the Secretary, price sixpence each

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Hayles Abbey.

In further illustration of the remains of this 13th Century Abbey (see page 231 ante) we give two more photographs of the bosses from the vaulting of the Chapter House, one of which represents Samson and the Lion.

The others are heraldic and of the late 15th Century and are from the cloister. The 13th Century cloistor had an open wooden roof and was in all probability burnt down as there is record of more than one fire that occurred, and in the rebuilding the roof was groined and the names of the benefactors are commemorated in their arms being carved on the bosses at the intersection of the ribs.

Fig. 1. Is the arms of Sir Edward Compton, gentleman of the chamber to Henry VIII.
,, 2. Is the arms of Huddlestone impaling Stapleton.
,, 3. The arms of Huddlestone alone.
,, 4. Huddlestone quarterly with Stapleton.
,, 5. The arms of the Abbot of Evesham Abbey.
,, 6. The arms of Percy, Earl of Northumberland quarterly with Poynings.

Fig. 3.

Fig. 6.

Fig. 2.

Fig. 5.

Fig. 1.

Fig. 4.

Carved Bosses from the Cloisters, Hayles Abbey, Gloucestershire.

CARVED BOSSES FROM THE
CHAPTER HOUSE OF HAYLES ABBEY, GLOUCESTERSHIRE.

Architectural Education.

Changes at University College.

After this season the existing two-years' architectural day course will be discontinued. The courses in future will both be for three years ; one course leading to the B.A. Degree of the University, the others to the college certificate. The architectural training in the two courses will be the same ; but candidates for the degree will have to pass the matriculation examination of the University before commencing the course, and the intermediate examination in general subjects at the end of their first year. Certificate students will not have to pass any preliminary or intermediate examination, but in their first year they will be required to attend lectures on general subjects, each student having the right to choose his own from a long and comprehensive list, including languages, mathematics, mechanics, physics, chemistry, geology, etc. The study of such subjects is discontinued after the first year in both courses, and the second and third years are devoted entirely to architectural work.

Reasons for the Change.

The reasons for instituting the degree course and for making the change in the certificate course are : (1) The amount of general knowledge possessed by the majority of boys on leaving school is not sufficient to enable them to follow a comprehensive architectural training, which must in these days include at least the simpler problems of engineering. Moreover, the student who cannot read books published in foreign languages is at a serious disadvantage. (2) Most schoolboys have not learnt how to learn, and nothing helps them to do this better than a course of study at a University. At the same time it is recognized that some architectural students, and those not necessarily the least promising, are unable to reach proficiency in certain subjects—mathematics, in some cases, languages, etc., in others, and the certificate course is therefore framed accordingly. The granting of the certificate is not in any way dependent on the passing of examinations in general subjects. The required standard in these for degree students—that of the intermediate examination—is not unnecessarily high, and yet is admitted to be sufficient for all practical purposes. (3) The first year, training in both courses includes instruction in building construction, and in architectural and freehand drawing, and students consequently commence their professional training from the first, this running concurrently for one year with the study of other subjects. (4) Degree students who, having passed the preliminary examination, fail in their intermediate, can, if they please, proceed with the certificate course without loss of time.

Correspondence.

To the Editor of "The Journal."

DEAR SIR,—In your issue of July, page 332, you have treated my Special Number of *British Competitions* containing the London County Council Hall most unfairly, and I hope you will rectify your criticism in the next number. What you got for criticism was the Students' Edition at 10*s.*, and we joined also a subscription form in order to make you aware that the book was issued in four different editions, from the Students' Edition at 10*s.*, up to the Edition de Luxe at 30*s.* Certainly nobody can find fault with the Edition de Luxe, neither concerning the "get up" nor the price, and it was in everybody's power to procure just the "get up" he was prepared to pay for.

Comparing my publication of these designs with the one in the papers I might claim:—

Firstly. That it is printed on much superior paper, with the exception of the Students' Edition, and not folded.

Secondly. It is entirely complete.

Thirdly. The printing is in so far superior as block-printing is bound to be to photo-lithography.

Finally. All the designs are uniformly reduced to the same scale, allowing thereby immediate comparison of the different designs, which is an immense advantage.

That you object to the advertisements I cannot understand, because you must be well aware that in England no such publication can be produced without the help of advertisements, as architects are not prepared to pay the price of production.

You might say that I ought to have sent you a superior edition, in answer to which I beg to point out that I sent thirty-five Review copies to thirty-five different papers on May 5th, and that I have up till now, July 2nd, received only five Reviews.

If you will take the trouble to walk down Charing Cross Road, you might be able to procure almost everyone of the thirty remaining copies, which have not even been acknowledged by the respective papers, at the second-hand shops at the rate of waste paper. As I had some inkling of this treatment of Review copies by the papers, you could hardly expect me to send out for this purpose the most expensive edition.

And concerning the Peace Palace at the Hague publication, I have occasion to know that this production which had the advantage of treating with designs turned out by the architects in a much superior way to those of the London County Council Hall, had no sale whatever, neither in this country nor elsewhere, and in confirmation of this experience I might tell you that of my Edition de Luxe I have sold as yet one entire copy, the remainder I suppose I shall have to give away as presents. Now, what is the earthly use of producing books luxuriously got up, etc., if there are no people about who are prepared to pay the cost price for them?

Yours faithfully,

Academy Architecture,

ALEX. KOCH.

58, Theobald's Road, W.C.
July 2nd, 1908.

[We are pleased to print Mr. Koch's letter, though the criticism was *bona fide* and expresses our reviewer's opinion of the publication, which was submitted for that purpose.—ED.]

Students' Correspondence Classes.

Commencement of New Course.

The instruction received by the Students during the past session has been of great assistance to them, and a steady improvement has been maintained throughout, in recognition of which the Council has awarded a prize of the value of One Guinea to the Student heading the list in individual improvement and position in class, viz., Mr. John Pickup, 6, Geraldine Street, Blackburn.

During next session, prizes of the value of one and two guineas respectively, will be awarded to the Students heading the lists in the first and second year's course.

A further prize value Three Guineas will be added the following session for the third year's course.

Syllabus, 1908-9.

These classes (first and second year's courses) will re-open on September 28th next, the latest date for receiving entries being September 23rd.

The course will extend through three years, the fee for each year being £2 2*s*. to be paid in advance.

It is advisable that Students should take the three years' course, but, if desired, the course may be taken from year to year.

Papers are sent out by the examiners once a fortnight for return by the Students in 10 days. These are examined, annotated and corrected by the examiners and returned for completion with the next question.

All papers set are to be returned and to be the sole property of the Society. They are not to be used by Students or others for teaching or illustrations.

The questions are graded and in the first year include the preparation of a series of structural details dealing with portions of a building covering all trades, with a view of teaching the proper preparation of reliable working and contract drawings and elementary design.

In the second and third years the work will include the preparation of small designs, details, and specification for same.

The examiners will inform each Student of his position in order of merit for improvement and also of his position in the whole class, for which purpose the various completed worked answers must be returned at the end of each year. The Society reserves the right of exhibiting or illustrating the drawings.

A model question may be obtained of the Secretary, price sixpence, and specimens of the Students' work, showing the progress made and the value of the classes, may be seen at the Society's offices.

Students may only take one yearly course at a time. All papers, whether first or second year, are sent out on the same date, in accordance with the time table to be supplied with the first paper.

The Society of Architects.

Examination, April, 1908.

Section III.—PRACTICE. Subject a.—SPECIFICATIONS.

WORKED ANSWERS by W. R. MALLETT, F.S.I., Examiner.

Question 1.—*How would you deal with provisional amounts in a Specification with regard to the following matters where the work is carried out, or the Articles supplied, by selected firms: Fire-proof floors, pavement lights, steel casements, lead glazing, lightning conductors, articles of ironmongery, baths, stoves and chimney pieces, carving.*

Answer 1. **Provisional Amounts.**

Fireproof Floors. It would be best to get tenders from approved firms in competition if the system of construction were not determined beforehand, and put the amount in the contract as a net p.c. provisional sum for the work, including fixing complete by the sub-contractor, and specify for the general contractor to provide his own profit (if any) and water, use of scaffolding, gangways, general attendance, cutting away and preparing walls, etc., for steel joists and concrete, and making good after same, and to pay the sub-contractor for his work on the certificates of the architect. The provisional sum would allow of adjustment for variations in the work actually carried out, on the measuring up for the settlement of accounts.

Pavement Lights and Steel Casements. Where a net p.c. sum is provided in the specification it should be for the lights, etc., delivered free at a goods railway station near the manufactory. The general contractor would pay the account, and must allow in addition for his profit, carriage, cartage and fixing, and be responsible for any damage that may happen to them.

Lead Glazing. This being specialists' work, a lump sum net p.c. would best be settled with a manufacturer for designs agreed upon, or a preliminary competition for same might be arranged if the work were sufficiently extensive, the work to be delivered as in the last item. The general contractor to pay the account for glass, etc., and for crates, carriage, cartage, fixing, and making good damages, etc. In very elaborate work or painted glass it would be well to provide for the manufacturer to fix same complete with all necessary saddle-bars, etc., in which case the general contractor would have to give the use of scaffolding, etc., and make good after the

fixing. In ordinary work, p.c. values per foot super are often given for the different classes of work, and the details and prices settled afterwards, and the account adjusted at the end of the work.

Lightning Conductors. These are seldom finally settled upon before the construction of the building, but an approximate provisional sum is put in the specification as net p.c., and on the completion of the carcase of the building, a specialist is called in to provide and fix the conductors, and the general contractor would have to pay him and provide for his own profit, use of scaffolding, attendance, excavation and cartage, filling pit with coke, making good after, etc. Any addition to or deduction from the provisional amount would be allowed in finally settling up the accounts.

Ironmongery. These articles are rarely selected until the joinery is completed ready for their fixing ; the time allowed for preparation of the drawings and specification not generally allowing for going into such close detail of the work. It is not usual to put in a lump sum for the whole ; but a net prime cost value for the various fittings as they occur in the specification, as p.c. for window fastenings of their several kinds ; for locks, furniture, and finger plates, etc., for doors, varying according to their different positions. The specification must provide for the contractor to have a profit and pay carriage and cartage and for fixing the ironmongery when selected by the architect, and to be responsible for any damage, etc., also to produce his invoices and receipts to the architect, for ascertaining the exact p.c.s, who will add to or deduct from the provisional amounts as the case may be. The commoner sort of fittings should be specified in detail at once without a p.c. sum. Baths, stoves and chimney-pieces being but seldom selected before the signing of the contract, p.c. sums must be provided in the specification, as nearly as may be to the proposed expenditure. For all these items the specification must provide for the contractor's profit, carriage, cartage and fixing, providing all materials, etc., also smith's work in fixing kitcheners. Accounts to be settled up at the end of the job as in the last paragraph.

Carving. This work is generally done by a nominee of the architect, who has arranged a lump sum for the carving including the preparation of drawings, models, etc., this sum is put in the specification as a provisional amount, p.c., which the contractor has to pay the carver. It must also be specified that the contractor must provide for his own profit (if he wants any), and for the use of scaffolding, enclosures, facilities for carrying out the work and attendance, dressing flat surfaces and mouldings, etc., after the carving is finished. Sometimes the architect puts in an amount at his own discretion (especially when the quantity of carving that can be afforded is uncertain), and arranges for the work with the carver afterwards when the building is ready for him.

Question 2.—*Draft a short Specification for a boundary wall built of bricks and faced with flint, providing foundation and coping, etc., as you may consider desirable.*

Answer 2. **Flint Wall.**

Excavate for the foundations to the depth indicated by the drawings, stepped up to suit the levels of the ground, etc., and level and prepare the trenches for the walling; fill in and ram when foundations are built, and wheel away and spread surplus earth over the adjacent ground as directed. Make good the road and other surfaces. Put concrete foundation 9″ deep under the wall throughout, 6″ wider than the bottom course of footings; the concrete to be composed of good local gravel and greystone lime in the measured proportion of six of gravel to one of lime, intimately mixed together and filled solidly in the trenches. Build the wall to the heights and thicknesses shown with stock bricks in greystone lime mortar, generally, and English bond, with buttresses 18″ wide and 10′ apart from centre to centre, on both sides, tumbled in at the top; all weatherings to be built in cement. Put proper footings to the wall breaking round the buttresses. Where showing to view the brickwork is to be faced with hard red kiln bricks with a neatly struck joint. Form a band 6″ deep of red bricks under the coping, and finish the plinths with Staffordshire blue splayed brick set in cement and mitred round the buttresses. The facing of the wall generally, above the plinth to be in random white flint work, built in blue ash mortar with a neatly struck joint; the bed of the flint work to be not less than $4\frac{1}{2}$″ and to be tied into the brick backing, etc., with long bonding flints, for one-sixth the superficial area, the faces of the flint work showing to view to be the knapped surface. Form the coping with half-round coping bricks and 3″ chamfered and throated course under same on each side: all to be Staffordshire blue bricks set and pointed in cement, and all ends of coping where the wall is stepped are to have $2″ \times \frac{1}{4}″$ wrought-iron holdfast ties 18″ long, and proper solid mitred angle pieces to the coping bricks.

Question 3.—*Describe briefly as many as you can of the forms of paving for surfaces usually adopted, and state what situations each is most suitable for.*

Answer 3. **Pavings.**

The following are the usual pavings provided for the several situations indicated:—

The earliest forms of paving for external use in this country were probably flints, large pebbles, slabs or boulders of local stone roughly laid on the surface of yards, paths, etc., slate slabs, etc., are similarly used in slate districts, these materials may also be seen used as the floors of rooms, outbuildings, etc., in cottages and farm-houses; they still linger in country places, but form an unsatisfactory and insanitary paving as they are not impervious to soiled water and filth, etc., and are incapable of being properly cleansed.

Portland cement concrete about 4″ thick, coated with a rendering 1″ thick in cement, is now generally substituted for those above named, and is an excellent method where cheapness is an object; it is suitable for yards, sculleries, wash-houses, larders, cellars, outhouses, and many other positions to meet the requirements of the building by-laws. In damp situations, as in cellars, it should be coated with asphalte to keep out underground water, etc. Granolithic paving is a superior variety of this class and is used for good work. Tar paving composed of Kentish rag or other suitable stone chips, heated and mixed with tar and pitch, laid in two thicknesses, coarse at bottom and fine at top, well rolled, is largely used for play-grounds, public footpaths, etc., and is suitable for such situations, the foothold being good, the cost of maintenance however is rather considerable. Asphalte paving, either laid as powder as the Val de Travers, or in a plastic state as the Limmer, and many others, is excellent for roads, footpaths, yards, skating rinks, dairies, abattoirs, coach-houses, etc., etc. Brick paving in its many forms, as in hard stocks for common work, Malm paviors, red kiln bricks and paving bricks, Staffordshire blue bricks and channelled cubes for better work, either flat or on edge, is satisfactory, especially if laid on concrete and grouted in cement so as to prevent percolation of water, etc., the red has a pleasing appearance and is used for paths, verandahs, porches, larders, and internal work generally, but it does not make a satisfactory pavement for public footpaths, for these blue bricks should be used, as for all situations where hard wear may be expected; when good foothold is required the surface should be chequered or grooved, as for yards, paths, stables, etc. A variety of this paving is the Dutch and Adamantine clinker, much used for stables, and of this there are many forms; they may be laid either in straight courses or "herring-bone" on concrete.

Paving with tiles has many varieties, some of local make, as 9″, 10″ and 12″ square red tiles, formerly much used for common work, but the best are of Shropshire, Staffordshire, or Hampshire make, from 2″×2″ to 6″×6″, and of many other shapes, sizes, and colours. They are suitable for halls, corridors, conservatories, verandahs, churches, etc., they are sometimes laid in one plain colour, but more frequently in patterns, with borders, etc., and are either glazed or unglazed; the former somewhat dangerous from slipperiness should be used sparingly except for hearths. The tiles for internal use are usually about ½″ thick, but for external use they should be 1″ thick, and in all cases laid on concrete, and bedded and grouted in cement. Encaustic tiles are somewhat similar but have a pattern formed on the surface in making; they were at one time much used for church work, many being reproductions of those made in mediæval times. Tessellated pavements, of small tiles laid in patterns, also small pieces of coloured marble or glass, called marble and glass mosaic respectively, are very good in appearance and much used in high-class work, as churches, halls, corridors, lobbies, etc., the designs are

frequently based on antique Roman work, all should be bedded on concrete and set in cement. For important buildings "Terazzo" paving is used for corridors, halls, etc., and looks and wears well. Stone paving with slabs of York, Portland, Hopton Wood, and other natural stones is sometimes used for yards, footpaths, etc., externally, and for porticos, halls, landings, etc. in buildings, and there is a great variety of artificial stones used for similar situations, some of the best known are "Victoria," Ransome's, Indurated (for railway platforms), "Non-Slip," and "Stonwood." White and black marble squares in "chessboard" pattern are sometimes used for halls, chancels, and other superior work.

Granite sets or cubes are suitable for very heavy cart traffic, as roads, yards, etc., in connection with factories and warehouses, they should be laid on concrete and grouted in cement.

Wood block flooring in deal, pine, oak, etc., is really paving; there are many forms of it and they are suitable for public rooms and halls especially in connection with fire-proof floors, and they form a noiseless paving for the gangways of churches; the pieces are generally laid with some plastic composition on concrete and in a great variety of patterns, as herring-bone, squares, interlaced, etc. For external work creosoted fir, Jarrah or Karri wood is generally adopted, they will stand heavy traffic as in roads, yards, etc., and are much less noisy than granite paving, but this should be used where the gradients are steep.

During recent years a new material, "Rubber," has been introduced for paving; it is used for halls, corridors, etc., in hotels, clubs, etc., and is quite noiseless.

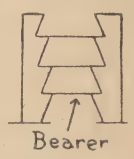
Question 4.—*Give a full description of a good linen cupboard to be fitted up adjacent to a bath-room.*

Answer 4. **Linen Cupboard.**

To be in deal, worked to detail drawing, and all faces showing to view to be neatly wrot.

Fit up the linen closet with $1\frac{1}{4}''$ dwarf framed front in two heights, square framed with small moulding mitred round the panels outside; hung folding by $2\frac{1}{2}''$ cast-iron butts, with proper rebated and beaded joints to $1\frac{1}{4}''$ framed and beaded grounds, and provide with two 4″ necked bolts, strong cupboard lock, key, brass escutcheon knob, rose and button to each division. The end enclosures and divisions to be of 1″ deal, and the top of lower division $1\frac{1}{4}''$ clean deal, projecting 2″ beyond the framing and to have rounded corners, the top and divisions to be plowed, tongued and glue-jointed, and the framing to have solid quadrant corners at the angles tongued to same. The total height of the closet to be 7′ 6″, and to be covered with $\frac{3}{4}''$ matched and beaded battens on $2''\times1''$ bearers, and finished with a corona moulding 6″ girt. Form floor to lower division with $\frac{3}{4}''$ matched battens on $3''\times2''$ bearers, and fit up one shelf formed of $2\frac{1}{4}''\times\frac{3}{4}''$ battens spaced 1″ apart with $3''\times\frac{3}{4}''$ chamfered

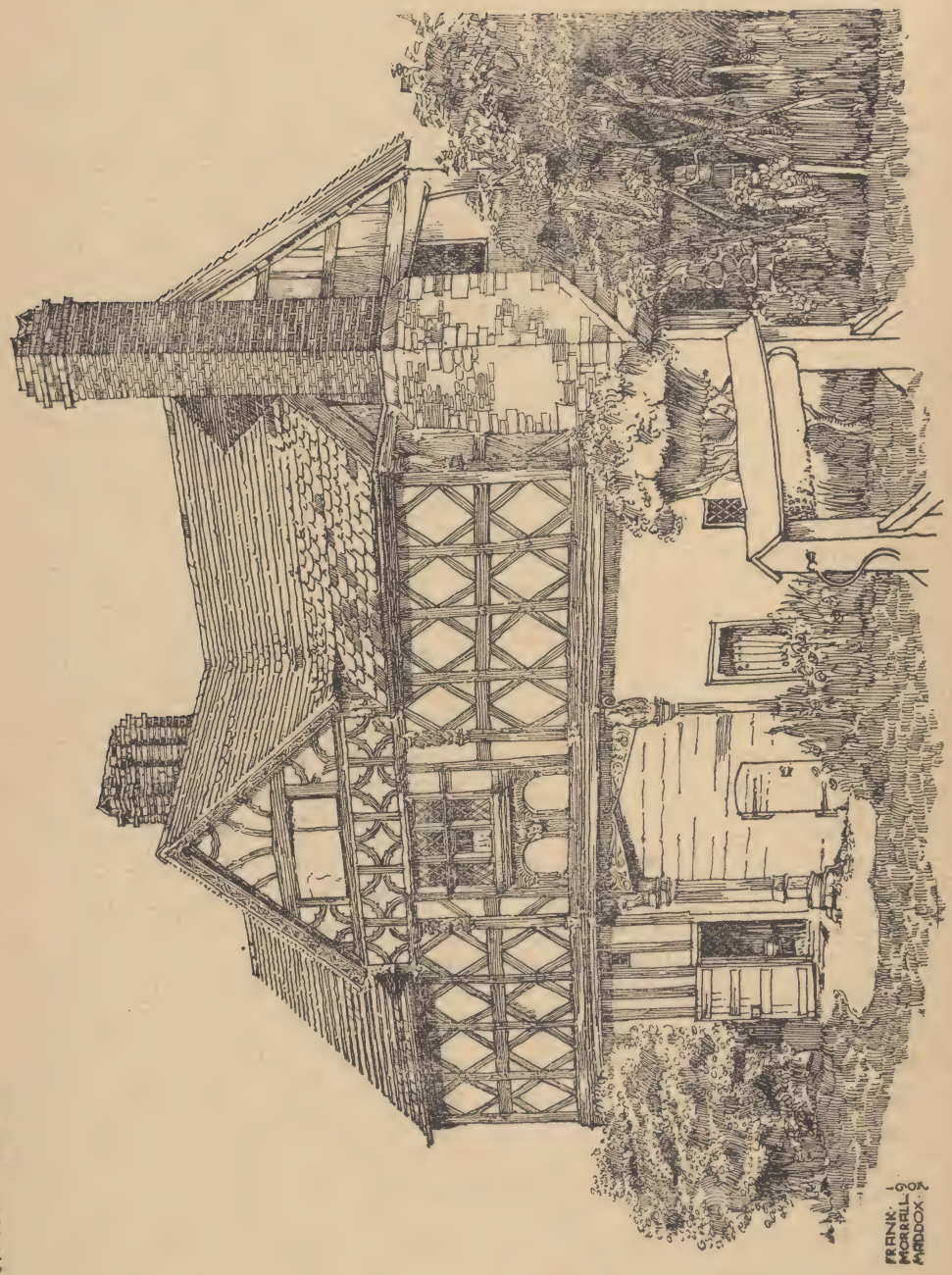
bearers at ends. The upper division to have three shelves of similar construction, but with ledges screwed on so as to be movable, and to be supported at each end by $2\frac{1}{4}'' \times \frac{3}{4}''$ cross bearers fitted into cut uprights $2\frac{1}{4}'' \times \frac{3}{4}''$, so as to be adjustable at any required distance. Provide all necessary holes, etc., for admitting warm air from the hot-water cistern and pipes as may be directed, also for pipes, etc., inside. Stain and twice varnish in copal, p.c. value 12*s.* 6*d.* per gallon, the outside of the cupboard.



Question 5.—*Write a Specification for the stall divisions and fittings of a stable for three horses with harness room, for a small country house.*

Answer 5. **Stable Fittings.**

All the fittings described are to be Messrs. —— & Co.'s, and the numbers are taken from their catalogue. Carefully fit and fix same, providing all necessaries and leave complete. The stall division to be No. 64, with extra strong cast-iron post, $4\frac{1}{2}''$ diameter, with ornamental ball head and self-fixing base, to be bedded in concrete. Wrought-iron ventilating ramp and wrought-iron cell for 2″ boarding, and brass ring for pillar chain. Fill in with 2″ pitch pine battens 7″ wide, wrot, plowed, tongued and V jointed, and finished with two coats of oak varnish, p.c. 12*s.* per gallon. Enclose the loose box with No. 33 division posts and ramp to correspond with stall division. Iron-framed door with improved hanging and patent safety brass latch, complete with pitch pine battens, etc., as for stall. Fit up the stalls with No. 75 patent manger fittings, with extra large barrel fronts, and improved shoes and bearers for fixing wrought-iron hay rack, manger, and water trough with brass screw plug and washer and stop-cock and spanner complete, and finished in enamel. Brass shackle for halter. The loose box to have a corner fitting, No. 77, to correspond with the others. Provide No. 65 rack for rock salt and fix over each manger; three pillar cords No. 48 and rack chains No. 37. The harness room is to be fitted with No. 53 cast-iron stove, with boiler, ashpan, and 4″ diameter sheet-iron flue pipe, a set of stoking irons. Two sets of patent brackets for riding harness, No. 72 and 73 (ladies' and gentleman's) with saddle bracket, girth and stirrup brackets. Three sets of brackets, No. 94, for single driving harness, for pads, collars, reins, and bridles; all to be finished in white enamel. Three driving whip holders, No. 69, of polished mahogany; two improved harness cleaning hooks, No 117, japanned; a saddle airer, No. 120, and girth drier, No. 120, for four girths. One No. 19 combined harness room table and saddle horse with cupboard and two drawers under; also a small cupboard, No. 20, cloth lined for stirrups, spurs, etc., both in pitch pine, varnished; the cupboard to be fixed to wall and supported by two suitable cast-iron brackets. Provide a galvanized iron corn bin, No. 60, to hold six bushels, with seat fitted on top to match the table.



THE GATEHOUSE
STOKESAY CASTLE
SHROPSHIRE

FRANK MORRELL MADDOX 1902

Corn seive, No. 48, and measure with iron top, No. 46, for half-peck. No. 67 improved chaff cutter for hay loft. Ladder, No. 17, leather padded and painted. Two No. 55 self-supplying carriage brushes, and 60′ of gutta percha tubing with couplings, etc. One No. 51 carriage setter. Rack for stable forks, No. 65, for three forks, and implement rack, No. 25, with four hooks. Brush and sponge strainers, Nos. 68 and 69. Soap box, No. 15, leather box, No. 16, and sand box, No. 17, all in galvanized iron. Two stable pails, No. 40. Wheel barrow, No. 44, and two lanterns, No. 48.

Question 6.—*Describe the gasfitter's work in laying on gas, and fitting up complete to a moderate size town house, with a provisional amount for the fittings.*

Answer 6. **Gasfitter.**

All pipes are to be wrought-iron welded tubes and to be fixed with red lead joints, pipe nails, and wall hooks, etc., and provided with all necessary tees, elbows, bends, and other fittings complete; the meter to be provided by the Gas Company. The dimensions given are the internal diameters and all pipes are to be painted two coats before being fixed. Lay on gas from the meter in cellar to the several fittings, the positions of which are indicated by red crosses on the plans; the main pipe to the level of first floor to be 1″, with ¾″ branches diminishing to ½″ for four or three-light burner, ⅜″ for two, and ¼″ for single burners. ¾″ pipe to cooking stove in scullery. Make proper connection to the meter and provide 1″ brass stop-cock with spanner to same; and temporarily plug the ends of all pipes when fixed. Provide the sum of £20 for cooking stove and fittings to the several rooms, etc., to be selected by the employer, being the trade list prices, and the contractor to allow for discount, profit, and carriage, and properly fix the several chandeliers, lanterns, brackets, etc., when selected, providing polished mahogany turned blocks for the brackets, and make proper joints to the pipes, etc. Test the pipes and fittings, etc., on completion and make good any leakages discovered, and leave all complete and perfect in every respect.

Stokesay Castle, Shropshire.

The accompanying sketch of the Old Gatehouse to Stokesay Castle is reproduced from a drawing by Mr. F. M. Maddox, a student of the Society, made during a sketching tour undertaken in connection with the Architectural Scholarship of which he was the winner last year.

The Society of Architects.

Examination, April, 1908.

Section III.—PRACTICE. *Subject b.—CONTRACTS.*

WORKED ANSWERS by FRANK W. MACEY, F.S.I., Examiner.

Question 1.—*An employer, a private person, agrees to a contract for a building work, but he omits to sign the contract. The contractor proceeds with the work. The employer now wishes to abandon the work, and says as he did not sign the contract he is not bound by it. What is the general rule of law governing such a case?*

Answer 1.—As a general rule, although one of the parties omits to sign the contract, he will be bound by the contract if it has been in part performed by the other party.

Question 2.—*A contractor sends in an account thus: brickwork £50, stonework £40, carpenters' work and sundries £150. He is asked what "sundries" include, and he replies, "oh! all sorts of odds and ends," and will give no further information. What is to be done?*

Answer 2.—Tender him an amount to the value of the brickwork, stonework, carpenters' work, and for any other item which can be found as having been done. If he refuses this amount, it will be for him to proceed in law against you for his account. He will then have to show what his item "sundries" includes.

Question 3.—*An architect gets out plans for a house and agrees to accept as his fee £250 for carrying the work through. The work is let out by contract at £7,000. The architect sends in his account as £350. The employer refuses to pay more than £250. What is the law on this case?*

Answer 3.—As no price of house was mentioned, and the architect agreed to a fee of £250, he cannot claim more if the house comes to more than he had in his mind when he stated the amount of his fee. His contract with the employer was not one of percentage, but a lump sum for a certain defined work, and if the house had cost less than the architect thought it would when he stated the amount of his fee, the employer would still be bound to pay the amount agreed upon. There is no question of a percentage on extra work in this case.

Question 4.—*An architect is carrying out a building work for an employer. When the building is partly up, the employer dismisses the architect for the mere reason that he wishes an architect friend to complete the work. Can the employer do this without rendering himself liable in any way to the first architect?*

Answer 4.—The architect is acting in this case as the agent of the employer. An agent can be dismissed at any time by his employer. The agent's remedy is an action for breach of contract.

Mainly about Members.

We regret to announce the death of Mr. BENJAMIN HARLOW BUTTERS, of 32, King Street, Nottingham. He was articled to Mr. T. Herbert Buckwell of Brighton and subsequently practised for a short period in London, afterwards removing to Nottingham. Mr. Butters joined the Society so recently as April, 1908, and his death at the early age of thirty-one is much deplored.

His Grace the Archbishop of Tuam recently laid the foundation stone of the new Christian Brothers' Intermediate and Technical Schools at Castlebar, of which MR. R. M. BUTLER is the architect.

MR. GEORGE P. ALLEN, of Arundel Street, Strand, and Sir Arthur Blomfield and Sons, have been appointed joint architects for the new church to be erected and known as All Saints in the county town of Bedford,

Mr. W. A. SCOTT, Mountjoy Square, Dublin, is preparing plans and specifications for Benedictine College, Gorey, Co. Wexford, for the Very Rev. Prior, and also for a new Church at Monea for the Rev. P. H. Maguire, P.P. The Church will seat about 300.

MR. CHARLES HAY has taken into partnership Mr. George Ramsay Thomson, son of the late Mr. George Thomson, solicitor, Dumfries, and the business hitherto carried on by him at 10, Bank Street, Dumfries, will in future be carried on under the name of Hay & Thomson.

MR. W. D. JENKINS, architect, Llandilo, South Wales, has been placed first in two recent competitions: (1) Out of sixteen designs for a new Church at Gorseinon to seat 600 persons; and (2) out of five selected designs for a Church at Ammoaford to seat 600 persons. In both cases work will proceed at once.

The Wesleyan Chapel, Dronfield Woodhouse, is being enlarged and improved by the erection of a new porch, new inner roof, windows, and increased seating accommodation. Some alterations are also being made to the schoolroom at the back. MR. W. CECIL JACKSON, architect, of Chesterfield, prepared the plans.

Out of a number of designs submitted for the new Methodist Church, in Shaw Road, South Shore, Blackpool, the trustees have selected that prepared by Messrs. Herbert Wade and W. B. WALTON (joint architects), of 27, Birley Street, Blackpool. The new building will cost £2,000. The work is to be proceeded with immediately. Mr. Walton recently won the Society's Travelling Studentship with a design for a Free Library.

The Presbyterians of Newport are erecting a new School at Stow Hill, part of a comprehensive scheme for the provision of a large Church in the upper part of the town. Complete plans have been prepared for the whole scheme by Messrs. Habershon, Fawckner & Co., architects, Newport and Cardiff. The schoolroom will be 51 ft. long and 26 ft. wide, and will have four class-rooms on each side with glazed and partly movable partitions. The accommodation will be for 300 persons. The present contract amounts to £1,518.

Members of the Nottingham Architectural Society paid a visit to Newark some weeks ago and were conducted over the Castle, Parish Church, New Grammar School Buildings, Moon Hall and other interesting places by Mr. H. W. Lockton. Afterwards the party adjourned to the Saracen's Head Hotel, where they were entertained to tea by Mr. Lockton, who presided, supported by the President and Secretary of the Nottingham Society of Architects. Mr. Lockton received a very hearty vote of thanks for his kindness and hospitality.

The contract for the erection of the new St. Lawrence's Church, Mansfield, has been secured by Messrs. T. & R. Moore, of Mansfield, for £3,025. At present only the nave, chancel, and transepts will be built, and these will accommodate 326 persons. It is hoped in the near future that the north and south aisles will be added, and the church will then accommodate upwards of 500. The church will be built of Hollington stone, and will be situated at the angle between Skerry Hill and Peck's Hill. Mr. L. H. Westwick is the architect of the new church.

Institute premises are being erected at Cardiff by Messrs. Thomas Owen and Co., Ltd., for their employees. The building is of the bungalow type, with a verandah along the full frontage, and the accommodation consists of reading-rooms, club-room, and a lavatory and bath-rooms. Contemporary with the erection of the Institute, Messrs. Thomas Owen & Co. are erecting a large building for the manufacture of paper. Both works are being carried out from designs by Mr. John W. Rodger, architect, Cardiff.

A new home for nurses has been built in connection with the Wolverhampton and Staffordshire General Hospital at Wolverhampton. The building comprises fifty-three bedrooms, private sitting-rooms for sisters, nurses, and assistant matron, library, visitors' room, a small kicthen, and other offices. The walls of most of the bedrooms are tinted green, as also are the walls of the sitting-rooms and library. The walls of the corridors are cream-coloured, and the floors of the entrance and hall and corridors on the ground floor are finished in Terazzo pavement. The corridors, etc., are heated by radiators under low-pressure hot water, and the sitting-rooms are fitted up with well fire-places. The building is lighted throughout with electricity. The plan adopted for the building was selected by the assessor (the late Mr. Henry Price, of Manchester) out of 148 designs submitted in open competition. The successful competitor was Mr. Arthur W. Worrall, of Wolverhampton. The scheme has involved expending a sum of £10,000.

The Dowager Countess of Dudley recently laid the foundation stone of the new Carnegie Free Library at Dudley, which will replace an inadequate building erected in 1884. It is being built from plans by Mr. George H. Wenyon, of Dudley, selected in competition. The principal façade of the building will be of stone, with a brickwork relief. The public entrance will be flanked by Doric columns, and surmounted by sculptured figures. The central portion will be treated on the upper story with Ionic columns, sculptured circular windows and panels, and terminated on top with a carved cornice and a circular pediment. The porch, which will be in stone, with vaulted ceiling and marble pavement, will lead to a large hall, fitted on one side with indicators and four delivery desks in connection with the lending department, where over 20,000 volumes can be stored. At the far end of the hall there will be a magazine room, with accommodation for forty readers, and doors on the right will lead to the general reading-room, where 100 people will be provided for. The staircase leading to the first floor, constructed in Derbyshire marble, will be near the main entrance. On the first floor will be the reference library, with shelving for 7,000 books, and provision in one room for thirty lady readers, and in another room for sixty men.

The foundation stone of the new Infirmary and Workhouse at Homerton, for the City of London Board of Guardians was recently laid. The Institution formerly existing on the site, which has an area of about six acres, consisted of workhouse buildings only, with receiving wards, dormitories, and day rooms, kitchen, dining hall, chapel, laundry, workshops, and married couples' quarters. The old main building bears the date of 1853, although the receiving wards were erected in 1878. The present scheme has been planned, and is being carried out under the superintendence of the architect, Mr. Albert E. Pridmore, Past-President of The Society of Architects. Included in the scheme, but not in the building contract, being deferred for the present, is a separate block for the accommodation of a short-period lunatics and imbeciles, with also a separate block for married couples. The major portion of the old buildings—the receiving wards, dormitories, day-rooms, chapel, dining hall, kitchen, and laundry—still remains; the kitchen and laundry being enlarged, while the general administration sections are also to be altered and adapted to the new conditions. The old workshops and married quarters have been pulled down in order to make room for the new buildings. The work of demolition and the erection of the new structures has commenced, the tender of Mr. Albert Monk, of Homerton, at £55,400, being accepted.

The late R. Frank Vallance.

The will of the late Robert Frank Vallance, Architect, Borough Surveyor of Mansfield, and President of The Society of Architects, who died in April last, aged 51 years, has been proved, the value of the estate being £31,158.

Annual General Meeting.

The Twenty-fourth Annual General Meeting of The Society of Architects, for the Session, 1907-8, will be held at Staple Inn Buildings (South), Holborn, W.C., on Thursday, October 15th, 1908, at 8 p.m.

Agenda :—

1. The Acting-President to take the chair.
2. Minutes of the last Ordinary Meeting.
3. Nominations for Membership.
4. Ballot for the following Candidates.

For Honorary Membership :—

Atherley-Jones. L. A., K.C., M.P.,	Kimberscote, Bray, Berkshire.

For Membership :—

Boddy. Percy Charles,	80, Beverstone Rd., Thornton Heath, Surrey.
Campbell. William Garrett,	Johannesburg and Boksburg, Transvaal.
Corby. Percy Edmund,	15, All Saints Place, Stamford, Lincolnshire.
Dicks. Harold Edward,	Semington Cleeve Hill, Cheltenham.
Farrow. John Wilford Hilbert,	King-Williamstown, Cape Colony.
Gibb. John,	Johannesburg and Boksburg, Transvaal.
Haugham. Charles Frederick Vernon,	P.W. Department, Cape Town.
Pearson. Lawrence Lewis,	142, Norwood Road, West Norwood, S.E.
Rogers. Fergus Carstairs,	Kimberley, South Africa.
Simmons. Alfred,	Glenmore, 41, Allen Road, Wolverhampton.
Wilkins. Victor,	24, Finsbury Square, E.C.

For Studentship :—

Smith. Albert George,	10, Worcester Place, Oxford.
Stephens. Robert,	New Chief Court Buildings, Rangoon.
Waller. Arthur,	879, Bolton Road, Bradford.

5. Council's Annual Report.
6. Election of Officers and Council, 1908-9.
7. Votes of thanks.

Architectural Scholarship, 1908.

Result of the Examination.

A competitive examination was held during May last for the Society's Architectural Scholarship which is of the value of £10, and is tenable for three years.

The examination was held in London, Manchester, Edinburgh and Johannesburg, and the Council has awarded the scholarship to

Julian Rudolph Leathart, 33, Canterbury Road, Brixton, S.W.

Mr. Leathart, who is seventeen years of age, is a student at the L.C.C. School of Building, Ferndale Road, Brixton.

THE
Journal
OF
The Society of Architects
FOUNDED 1884. INCORPORATED 1893.
Including Transactions and Architectural Notes.

No. 11. Vol. I.] SEPTEMBER, 1908. [New Series.

The Society is not, as a body, responsible for the opinions expressed by individual authors and speakers.

The Lighting of Pictures & Picture Galleries.

By G. A. T. MIDDLETON, A.R.I.B.A.*

THE very important problem of the illumination of works of art, pictures, and picture galleries is one that presents peculiar difficulties and demands very careful consideration. Works of art are created primarily for the gratification of the eye, and it is only reasonable to expect that unique pictures, etc., which are purchased at considerable cost for the benefit of the nation, should afterwards be exhibited under the very best conditions, and illuminated in such a way as to render it a pleasure to look at them.

At present the possibility of extending artificial lighting to such galleries has, perhaps, hardly been sufficiently considered. There are many people interested in art who are rarely free to indulge their taste in the daytime, but would doubtless be glad to study pictures in the evening, if only adequate artificial illumination were provided. Moreover, any one who has had experience of designing facilities for daylight illumination knows how difficult it is to ensure sufficient lighting at all parts of a big building and under varying atmospheric conditions, and on dull days the illumination in certain regions of many of our picture galleries will not unfrequently be found to be quite insufficient to do justice to the pictures exhibited.

Theoretically, artificial light, being under control, ought to enable the artist to secure effects that he otherwise could not hope to attain. As a rule the appearance of a picture under artificial light is very different from that in the daytime. Many a picture which appears commonplace and dull in the daytime is rendered attractive

*From *The Illuminating Engineer*, August, 1908.

by artificial lighting, while conversely a picture which is brilliantly effective by daylight often becomes vulgar and obtrusive when illuminated artificially. It is therefore necessary to consider the question scientifically, and to study the object which the artist had in view.

A painter is not bound by conventional rules nor practical considerations, and if, for the sake of composition, a shadow looks best when projected towards the light, so it will very probably be found. Architectural draughtsmen are even greater sinners in this respect than painters, as careful examination of their perspective drawings at the Academy or any other exhibition will show.

When artists attempt to depict artificial light and its effects they invariably treat of located lights, which they employ much as the stage manager of a theatre does his limelight. Their effort is to bring into prominence some particular part of their composition while throwing the rest into shadow. Startling effects are often thus created, and many an interior, if carefully analyzed, will be found to owe much of its effect to methods of lighting which are absolutely impossible in practice.

But when it comes to the actual lighting of pictures hung in a room or gallery the artist's ideal changes. He will probably demand a generally diffused illumination, rather than a centralized light, even though there are many cases in which the latter would be considered preferable from an artistic point of view. In so deciding he is guided by the fact that, unless such a system is adopted, it is almost impossible to avoid reflection of the sources of light off the surface of the picture. In the New Gallery, the Academy, and many others, clusters of incandescent lamps are so placed as to give an effect approximating to that obtained by the admission of daylight through glass skylights. It need hardly be said that it is absolutely essential in a picture gallery to prevent the possibility of the sources of light being so placed as to be troublesome to the eye, in order that the visitor may have nothing to distract him or interfere with his comfort.

In our national collections no artificial illumination at all is used at present, although the reason for this is probably to be found in the deterioration of paintings when exposed to the fumes of combustion emitted by certain illuminants, and also the serious consequences of a fire, rather than in the mere mechanical difficulties involved. At the present time there may be said to be a number of methods by which an approximately uniformly diffused artifical illumination may be obtained. We may, for instance, imitate daylight conditions by suitably grouping our sources of light above diffusing glass roofs, or we may utilize inverted lamps and reflection off a white ceiling. The new Moore vapour tube lamp (see *Illuminating Engineer*, January, 1908) is also said to provide both a very soft and uniform illumination, combined with good colour definition.

On the other hand there are often pictures which require special local lighting by concealed lights in order to show to the best advantage, and one would imagine that the intensity of illumination desirable under these circumstances would depend very greatly upon the nature of the picture. The method adopted in the case of the portraits of past-presidents in the meeting room of the Royal Institute of British Architects is an excellent example of this type of lighting.

One question, however, which goes to the very root of picture gallery illumination is that of correct revealing of colour—by " correctness " being generally understood their appearance in diffused daylight. As a rule pictures are painted with the object of being exhibited in daylight, and when their charm depends upon the assembling of harmonious and delicate shades of colour, it will readily be understood that the distorting effect of some artificial illuminants is often anything but pleasant. At the present time there cannot be said to be any general and definite agreement as to which of the existing sources of light most closely resembles daylight, although the enclosed arc lamp, acetylene, the carbon dioxide Moore light, and other illuminants, have all been claimed to be advantageous in this respect.

But perhaps the most important qualities which must be exacted from an illuminant for picture galleries are those affecting the wellbeing and safety of the often priceless and unique pictures exhibited.

The possibility of fire must be reduced to a minimum. An objection that has been urged against gas-lighting is that the products of combustion may gradually affect the pictures. Certainly electricity is free from this suspicion ; yet if adequate provision is made for ventilation, including means of carrying away the injurious gases *immediately* they are created, it is probable that gas can be used without serious risk. It is true that gas-lighting has, in several instances in the past, proved to be injurious both to oil and water-colours, but in these cases the lighting was carried out by the old flat-flame burners, and without adequate ventilation. Probably the best plan of all, if gas is used, is to keep the lamp entirely outside the enclosure containing the pictures—to place it outside and above a diffusing skylight, for instance.

There are also many country houses where collections of valuable pictures have been gathered together, and in many such cases neither gas nor electricity is available. Under these conditions, either a small electrical plant will be installed or recourse will be had to self-contained systems of lighting, such as acetylene or petrol-air gas. Here again questions of ventilation and security from fire must be given careful consideration.

When we bear in mind the desirability of keeping historic paintings intact for centuries without their fading or losing their attractive appearance in any way, we can readily understand how small and almost inappreciable changes may gradually

take place and eventually cause great mischief. In this connexion the possibility of certain kinds of light causing the colours of pictures to fade must not be lost sight of. It has been proved, for instance, that ultra-violet light is particularly effective in this way, and we should therefore avoid sources of light rich in such rays, or at least take precautions to render them innocuous. It is, of course, also possible that even visible rays exert the same influence to some degree. This is therefore one other aspect of the question on which further information is required, before we can definitely decide on the best variety of illumination for use in picture galleries.

London Building Acts.

The Tribunal of Appeal under the London Building Act have, after consideration, dismissed the appeal of Elizabeth R. Gibbon and Constance Moore against the consent of the London County Council to the retention of a building on the western side of Salem Road, Bayswater, known as Moscow Court, as erected from plans submitted on behalf of Messrs. Metcalf & Greig, William Whiteley, Ltd., and Mr. G. C. Bond (see page 74, December, 1907). The case was argued on July 23rd, before the Tribunal by Mr. Danckwerts, K.C., and Mr. R. Cunningham Glen, on behalf of the appellants, and Mr. H. Avory, K.C., and Mr. J. C. Tomlinson on behalf of the respondents. The facts were somewhat unusual. The building, which is a block of flats, and the height of which exceeds the width of Salem Road, was erected in 1903 without the consent of the County Council, as such consent was then considered unnecessary. After the building had been erected, the appellants, who are the owners of all the property on the other side of Salem Road, went to the Court of Chancery for an injunction ; but Mr. Justice Kekewich upheld the view that no consent was necessary. The matter went to appeal, and the Court directed the owners of the building to apply to the County Council for consent to the erection of the building. An application was made to the County Council, under section 49 of the London Building Act, for the retention of the building, and the Council consented to such retention. The appellants then came to the Tribunal of Appeal, and contended that, having regard to section 48 of the Act, which governs section 49, the Council had no power to give an *ex post facto* consent. The Tribunal decided first to hear the case on its merits, and after Mr. Gruning, F.R.I.B.A., and Mr. White, F.R.I.B.A., had given evidence to the effect that the buildings exceeded the width of the street, and would prejudicially affect the opposite buildings from the point of view of air and light, the chairman intimated that Mr. Avory need not reply on the merits. Mr. Danckwerts and Mr. Avory having argued the legal points, the Tribunal deferred its decision, which has now been given.

Warming & Ventilation of Hospital Wards.

By THOS. W. ALDWINCKLE, F.R.I.B.A.*

THE author bases his remarks on the system of warming and ventilation of the principal wards in vogue at the most recently built Fever Hospital of the Metropolitan Asylums Board, the South Eastern Hospital, London, a system different from that of any other of the numerous Hospitals of that Board.

The principal wards are of varying size, containing 20, 22, or 24 beds, and are all 28 ft. wide and 13 ft. high, with a linear wall-space of 11 ft. per bed. This gives 154 ft. superficial floor area per bed, and a cubic space of 2,012 ft. per bed. The window area (between the reveals) provides one square ft. for every 57 cubic ft. contents of the ward. All the windows are double glazed, with 32-oz. sheet glass, in order to diminish the loss of heat.

To avoid the use of open fireplaces in the large wards it was necessary to adopt some system of mechanical ventilation, and a choice had to be made between the Plenum and the Exhaust or Aspiratory systems as a means of mechanical ventilation.

The Plenum system is by far the most positive and effective, so far as regards a direct supply of air, but for hospital purposes there are some grave objections to this system, which drys, and to some extent bakes the air, and renders it unsuitable for a hospital ward.

As compared with this, the Aspiratory system is preferable. The air requires heating up to a much more moderate temperature, but on the other hand, this system is not so effective in causing the inflow of the fresh air through the openings provided for the purpose. On the whole, however, it was considered that the balance of advantage was on the side of the Aspiratory system, and it was decided to adopt it, taking precautions to avoid its defects as far as possible.

The question then was whether the ventilation should be " upward " or " downward," and in this connection the laws governing the prevailing air currents in a ward or room had to be considered. The principal result of these currents is that the air is warmer near the ceiling, and cooler near the floor. This suggested that in a mechanical system upward ventilation should be resorted to, bringing in the warmed fresh air through the external walls at or near the floor level, and removing the vitiated air at the ceiling line.

In arranging the scheme, the following points were decided upon :—

The supply of air per bed per hour to be 6,000 cubic ft.

The temperature of the wards to be maintained at 62 deg. when the external temperature is 20 deg.

*Summary of a paper read at the Royal Institute of Public Health Congress at Buxton, July, 1908.

The heat to be from a low-pressure hot-water circulating system.
The temperature of the water in the radiators not to exceed 150 deg.

For the movement of air there were to be large areas for ducts and channels, with low velocities.

The hot water circulation is a forced one, being pumped, in four sections, from a central pumping and heating chamber, the water being heated in steam heaters and leaving the heaters at a temperature of about 175 deg.

The flow and return pipes to and from the radiators on the first floor are placed in external chases in the external walls, closed in with iron shutters. This obviates running these pipes against the inside of the walls of the ground floor, an unsightly arrangement which blackens the walls.

Extraction of Vitiated Air.

The method of extraction, as being the motive power of the whole scheme, should be first described. To each ground floor ward there are four ceiling panels leading into ducts in the floor construction, these ducts discharging into four brick vertical shafts, 18 in. by 18 in., lined with salt-glazed bricks, and with rounded internal angles. In each of these vertical shafts is placed a fan, 18 in. diameter, running at 600 revolutions a minute, discharging the air at the top of the shaft. To the first floor wards there are four ceiling panels leading direct to a horizontal trunk above the ceiling, tapering from 2 ft. to 1 ft. 2 in., constructed of "Frazzi." This trunk discharges into a vertical octagonal shaft, 3 ft. 6 in. diameter, in which is placed a 36 in. fan, running at 300 revolutions per minute.

For the purpose of ascertaining the amount of air actually extracted by these fans, a series of tests with the Anemometer was made after the wards were completed and occupied. The results gave an average of 6,850 cubic ft. per bed per hour, and indicated a velocity in the shafts of about 4¼ ft. per second.

As there are 348 beds in the wards thus ventilated, the amount of air removed in 24 hours is about 1,800 tons, which will give some idea of the work done by efficient fans. The cost of working the fans is about £2 8s. per day, or a half-penny per hour for each fan.

Admission of Fresh Air.

Before describing the method of admission of external air and the warming of same, it should be pointed out that, under the Aspiratory system of Ventilation, while the whole of the vitiated air is removed by the fans through properly constructed channels, the same rule does not apply to the entering air. The slight vacuum induced by the fans will cause air to come in from any point of least resistance, and consequently, in addition to entering through the properly appointed inlets, it will enter through a variety of other sources, such as loose windows, chinks, casually opened doors, etc., and last, but not of least

importance, from the sanitary turret. The result of all this will be that the quantity of air coming through the properly appointed inlets will be less than the total amount of air extracted.

The properly constituted inlets under the scheme now being described consist of channels and gratings in the external walls at the floor level, leading to cast-iron radiator cases each containing a cast-iron radiator. These are placed under the windows in the side and end walls, and one in each corner of the ward. For a ward of 24 beds there are 26 of these inlets. With the exception of the corner inlets, these cases are 3 ft. 6 in. long, 2 ft. 9 in. high, and 11 in. deep inside, with folding doors. These are brass hit-and-miss gratings on the top of the case, and similar gratings in the doors at the floor level. These cases are cast in five pieces, viz.: top, two sides, and two doors, and are put together with screw bolts, so that they can be easily taken to pieces for cleaning purposes. The radiators thus enclosed are of the three-column hospital type, and contain from 40 ft. super to 58 ft. super of heating surface; providing about 1 ft. super heating surface to every 40 ft. cubic space in the ward. A somewhat larger amount of heating surface is provided in the radiators against north and east walls.

The radiators are placed under the windows, as, owing to the great loss of heat through the glass, this is the coldest part of the ward.

By this system the access of external air into the ward is simple and direct, without long ducts or channels of any kind. The principal essential is that the exhaust fans should be of ample size and power, and it is preferable to have fans of large diameter running at a low speed, rather than small fans running at a high speed, as the latter cause a "hum" which would be objectionable to the patients, and also consume more electric current in proportion to the work done.

It is most desirable to have fresh-air inlets in each corner of the ward, to prevent the possibility of stagnant air in these positions.

It was found, as the result of a large number of tests that the total amount of air coming in through the properly constituted inlets, with the fans working and all windows closed, was an average of 5,800 cubic feet per bed per hour, and at a velocity through the inlets of a little over 2 ft. per second.

No means were available for measuring the quantity of air coming in from the other sources already mentioned, but it would be somewhat considerable, and would bring the supply of air to quite 6,500 cubic ft. per bed per hour, and most of it, being cold, would be required to be warmed by diffusion with the warmed air coming in through the legitimate inlets. This had to be considered in calculating the heating surface in the radiators.

Tests were also taken of the inlets when the windows were more or less open and the fans at work. When the top hopper sashes only were open, the amount

of air entering was equal to 3,500 cubic ft. per bed per hour, and when the hoppers were open and the upper sashes half-open the amount entering was 3,000 cubic ft. per bed per hour. This shows that, while the fans were still doing their duty in extraction, a large quantity of air was being brought in by their agency through the open window instead of through the radiator cases.

There has been no difficulty in maintaining the required temperature in the wards during cold weather with the windows closed and the fans at work. With the fans not running and the window hoppers partly open the temperature has been maintained at 58 deg. This temperature is immediately raised when the fans are set going, thus proving the accuracy of the theory that the efficiency of the heating surface increases with the increase in velocity of the air passing over it.

A Danger to be Avoided.

The danger of drawing air in from the sanitary turret into the ward would be inevitable without some special provision. In the present scheme the sanitary turret is provided with an exhaust flue leading from the ceiling level on each storey, and connecting into a duct leading into the main exhaust turret in the roof, at the end of which duct is placed a 12 in. fan, which exhausts the air from the sanitary turret into the roof turret, from which it is removed by the main 36 in. fan. The result has been that no air is drawn from the sanitary turret into the ward, but that the flow of air is in the reverse direction. There are several fresh-air inlets at the floor level in the external walls of the sanitary turret, and these assist the process.

The Preference for Open Windows.

One objection to the Aspiratory system is that it is not fully efficient except with all windows closed. So long as the exhaust fans are working and doing their full duty, the incoming air will naturally take the points of least resistance, and those will necessarily be the windows (if open), as the large area of openings offered by even the top hopper sashes of ordinary hospital windows will be much greater than the area of the inlets through the radiator cases. Thus we come face to face with the marked and general preference in this country for open windows in all weathers as a means of ventilating hospital wards. This question is mainly one of climate. In colder climates, such as Germany and America, the artificial system of ventilation is general, but in this climate it is possible to keep open the windows of a hospital ward for from 300 to 330 days in the year without danger to the patients. Such a system is " natural " ventilation, and requires open fireplaces, firstly as a means of warming (sometimes supplemented by hot-water radiators), and secondly as an important factor in the ventilation, for the open fire is a powerful exhaust ventilator, and, in connection with open windows, removes the vitiated air near the floor level, creating practically a system of downward ventilation.

It was the desire to avoid the labour and inconvenience incidental to open fires which caused the demand for artificial ventilation, and we cannot expect to have all the advantages of both systems.

In the case of hospital wards, which have a very large area of external wall space (generally both side walls and one end wall), and also a large area of glass surface, there is a great loss of heat during the winter. There is also a considerable loss of heat through the ceilings of the upper wards. These losses of heat are a very serious item, and must be carefully considered in estimating the amount of heating surface required.

The large amount of external wall-surface presents another difficulty, especially in connection with the Aspiratory System of Ventilation. With a strong wind against one of the side walls, the inlets must be carefully regulated and reduced in area by the hit and miss gratings, or a great excess of air will come in one side. If this is allowed to continue, some of the inlets in the opposite wall will become outlets, in spite of the fans.

The supply of 6,500 cubic ft. of air per bed per hour is a large one, but not as large as would be obtained through open windows under a "natural" system of ventilation, but the warmed entering air is more equally distributed throughout the ward, and the temperature of the ward is much more uniform. In considering the relative amounts of air entering under the two systems, we must bear in mind that when windows are open on opposite sides of a ward, a good deal of the air entering on one side goes out on the other, and does not mingle with the air of the ward. The diffusion of the warm entering air with the general air of the ward is of vital importance in connection with the ventilation and warming, and although in an ordinary room with several occupants, diffusion is a slower process than convection, the rule hardly applies to a ward with a large cubic space per bed.

When open fires are supplemented by hot-water radiators, the latter should be for the purpose of use in the very cold weather only, the fires being of size and number sufficient for normal winter temperature, otherwise the temptation is great to reduce the number of fires going, or to disuse them altogether on account of the trouble they cause, and thus to lose the benefit of the exhaust ventilation.

Whatever system of ventilation is adopted, natural or artificial, one thing is most important, viz. : that there should be plenty of inlets, whether warmed or not, in the external walls actually at the floor level. This is the part of the ward which requires most ventilation, and so seldom gets it.

In describing this system as being without open fires, it should be mentioned that one small fireplace is provided in each of the large wards, so that patients can sit round it for cheerfulness. These fireplaces, however, are so small, in relation to the size of the large wards, that they do not enter into any calculation, either of warming or ventilation.

Some Considerations on the Design of a Generating Station.

THE paper on the above subject read by Mr. H. Richardson, City Electrical Engineer, Dundee, before a meeting of electrical engineers in Nottingham, is to a large extent non-technical and being written more for the benefit of those interested in the commercial side of the work, contains a good deal of information which may be useful to architects, particularly in regard to the use of materials; the question of site, the influence of the type of plant to be used on the cost of buildings, foundations, and chimney construction, the use of reinforced concrete, and other important points.

It may usefully be read in conjunction with a lecture given before the Society by Mr. H. Boot last January (see Vol. I., No. 4, page 134), on a similar subject.

The Choice of a Site.

Before commencing the design of a generating station, an engineer has to consider the characteristics of the various available types of plant and systems of supply, the choice of which should be controlled by area of supply, density and customs of population, staple industries, geographical position, probable future of locality, tendency of its industries, and its relations with adjacent boroughs and localities.

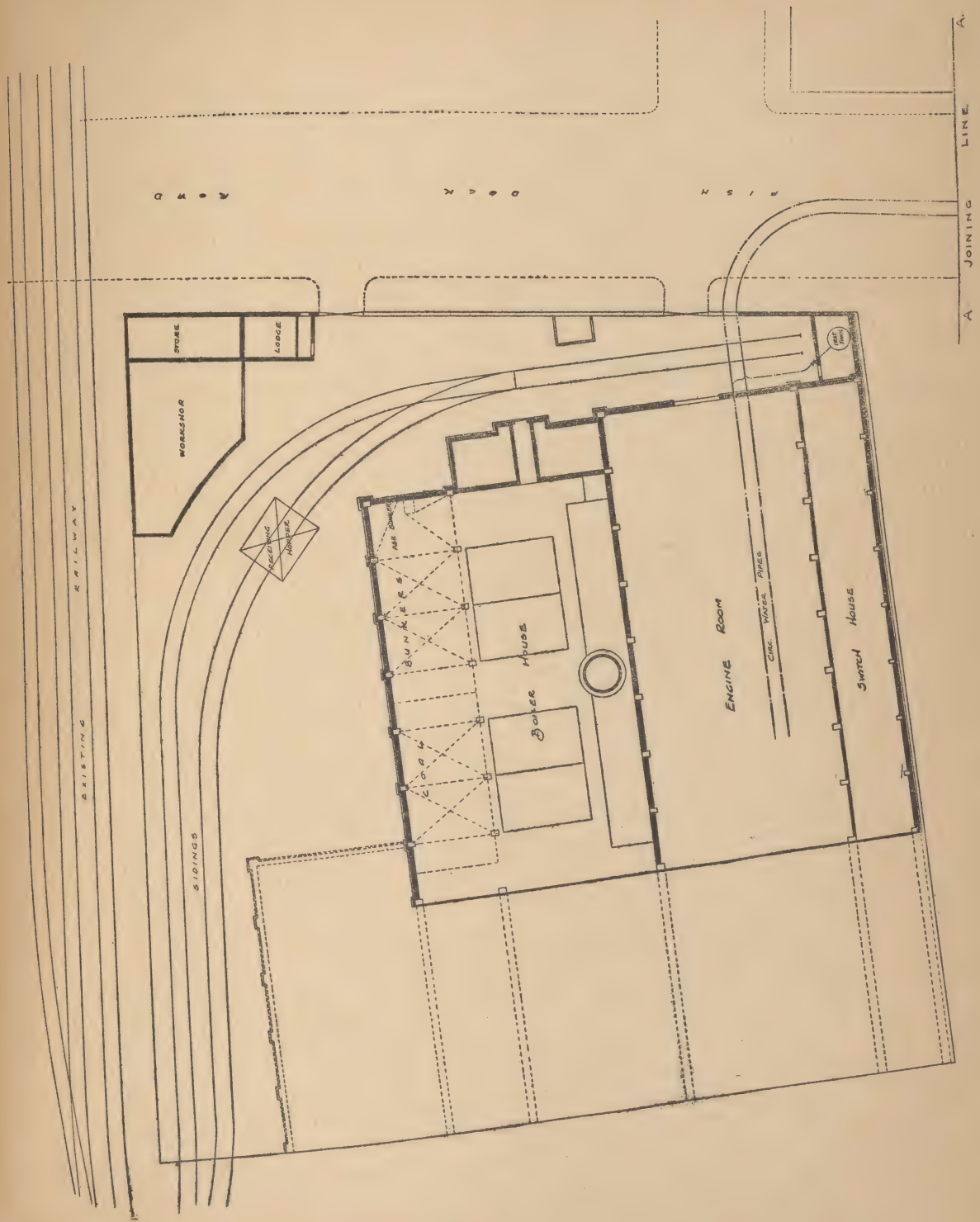
The type of plant and the available sites are very closely connected, and the plant to be discussed will be a steam turbo-alternator system with extra high pressure alternating supply, this giving greater choice of sites.

Many existing stations have been very badly placed with regard to coal and water supply.

In most large towns near rivers or estuaries, the railways run very near the water, therefore sites near the water possess a double advantage. Unfortunately, such land is usually found to be filled in or made up land, reclaimed within a comparatively recent period. Therefore, viewed from a foundation standpoint, it is always very bad, unreliable, and in many cases, contains the potentialities of chemical actions which will cause the authorities grave distress ere long with regard to all pipes, cables, etc., which have been laid in the ground, if they are not specially and expensively protected. The problem of securing foundations giving a maximum of stability with a minimum of cost is, however, an interesting point in connection with such sites, and much could be said thereon.

Foundation Construction.

The cheapest system is the construction of a large floating or raft foundation, the main object of which is to distribute the concentrated weights of the plant and buildings over such an area that the resulting intensity of pressure is less than the


A JOINING LINE.
STORE
LODGE
WORKSHOP
EXISTING RAILWAY
SIDINGS
BUNKERS
BOILER HOUSE
ENGINE ROOM
SWITCH HOUSE

safe bearing capacity of the ground. The commonest method was to use a plain concrete raft of considerable thickness, but there are very few cases where this has not developed cracks, and unequal settlement of superstructures has occurred. Many such rafts have been reinforced with old tramway rails, but with little improvement.

We now come to piling foundations, and as wood piles particularly in such grounds as the above are liable to rapid deterioration, the tendency in view of the experience obtained latterly is to make use of reinforced concrete in the construction of piles. If carefully and properly executed no better foundations can be made, taking into consideration maximum stability with minimum weight and cost. There are many different systems of reinforcement.

In very bad made-up ground containing much silt, with distances of 25 to 35 ft. to rock, a safe load of 60 tons may be allowed on any well constructed pile. In connection with the driving of these piles it is often specified that a weight equal to 2 tons, falling 3 ft., is to be used, giving a specified maximum amount of set such as $\frac{1}{4}$ in. for ten blows, before driving is stopped. The author is of opinion that this results in a needlessly severe blow in ordinary practice, the change of velocity on impact being too great, resulting in damage to the heads of the piles, and causing much extra work and inconvenience.

Piles should not be driven until from fifty to sixty days old at least. Even longer than this should be allowed for the concrete to set if possible.

Among the accompanying sketches is a plan showing the arrangement of the piles and raft for a generating station at present being constructed by the author, and for information it may be observed that the cost of the foundation including the raft, the piles, and reinforced foundation for the pipe track and reinforced pump chamber was £5,800. The depth from ground level to rock was 30 ft.

The advantages of reinforced concrete construction may be carried beyond the actual piling, as it can be used to make a strong and light raft or floor over the heads of the piles and monolithic with them, forming a very complete and stable foundation for the superstructure. It lends itself to easily and cheaply conforming to the exigencies of the plant as regards differences in level of floors and foundations.

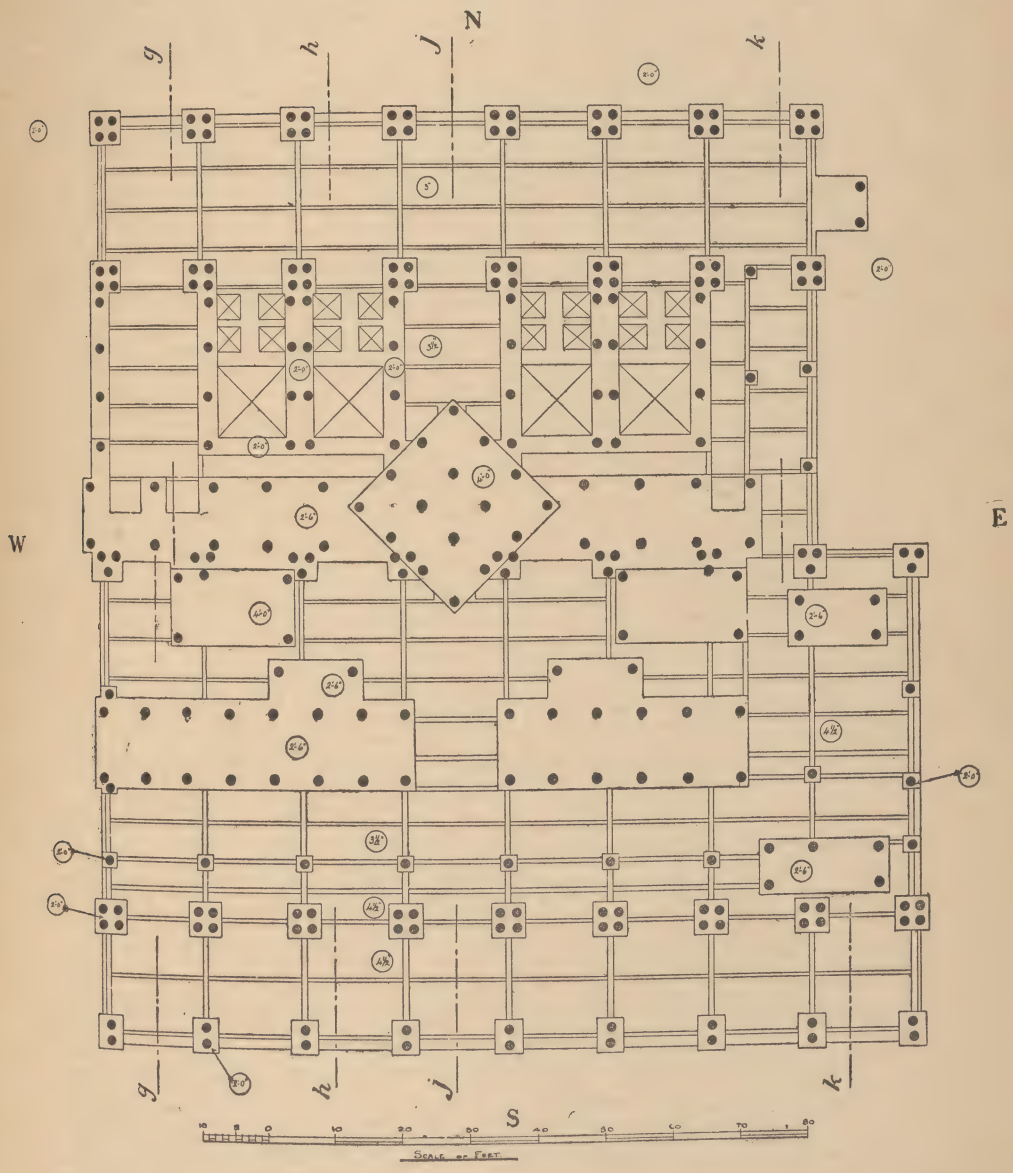
The Superstructure, its Material and Design.

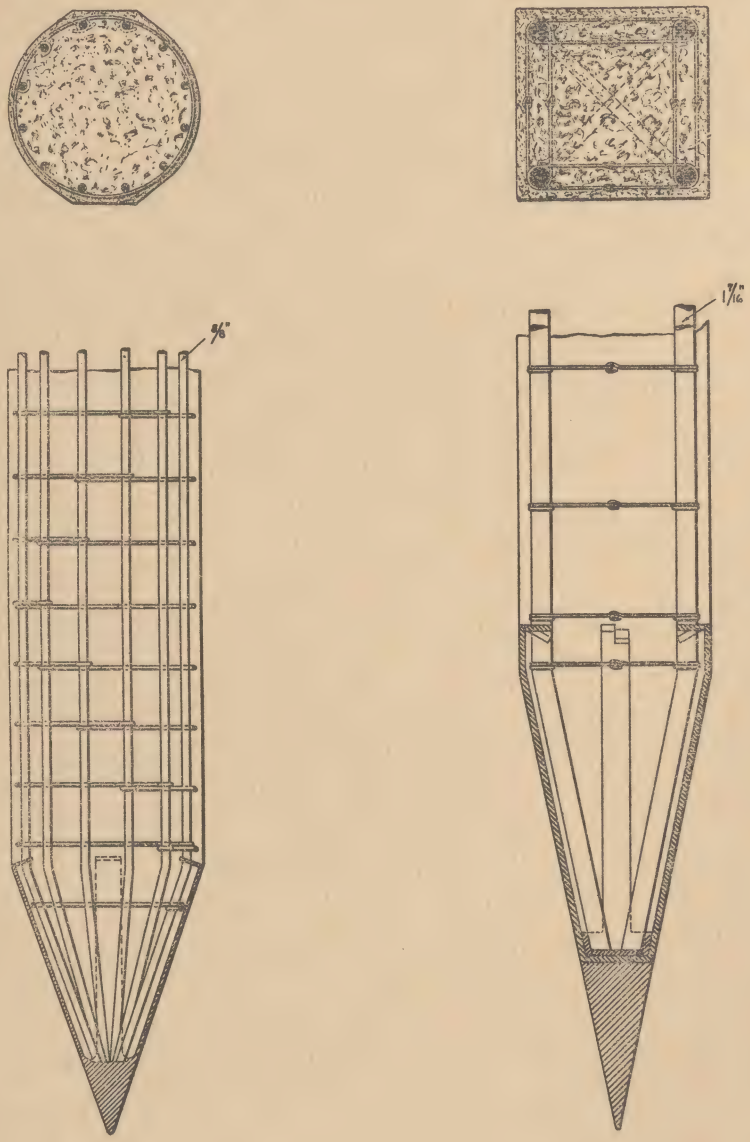
As regards superstructures they may be sub-divided into the following classes of buildings :—

(1) Brick or stone entirely.
(2) Reinforced concrete.
(3) Steel skeleton with light brickwork filling.
(4) Steel skeleton and corrugated iron walls and roofs.

With regard to the first-named, such a building is unnecessarily heavy and

— REINFORCED CONCRETE FOUNDATION —




5/8"
1 7/16"
COIGNET
HENNEBIQUE

expensive, and is the form generally used when an architect is allowed *carte blanche.* The heavy burden of capital expenditure unnecessarily carried by many stations has undoubtedly been largely contributed to by such useless extravagance further aggravated in many cases by equally useless and more sinful ornamentation.

The author will pass from further consideration of this style of building with a strong recommendation to engineers to check with a firm hand this tendency of their architects, unfortunately, often receiving public approbation at the time, owing to the usual municipal cry of providing "something worthy of the town." This, however estimable in the case of art galleries, cannot be too strongly condemned in connection with industrial enterprises under municipal management, which should be of a particularly exemplary nature as regards their sound commercial standing, especially in these times when there is such a tendency to compare the results of municipal management with those of private enterprise.

Reinforced Concrete.

In reference to reinforced concrete superstructures, the author is strongly of opinion that they are not eminently suitable for the requirements of electrical generating stations. They are not cheaper than the style of building above referred to, the stability is in no way superior, and while certainly lighter, considerable inconvenience is met with in the fact that once up, the design cannot be interfered with in the way of alterations without prohibitive cost. Also, so much depends, apart from the value of the system itself, on highly skilled and expensive supervision, and one weak part involves such heavy consequential damage. In the complication necessary for superstructures as distinct from foundations, small but important weaknesses are apt to creep in almost beyond detection, however vigilant the inspection, or however good the work of designers or contractors may have been.

Steel Construction.

Coming now to the composite building consisting of a steel skeleton filled in with light brickwork, this appears at the present time to be the most perfect system of building, provided unnecessary ornamentation such as mentioned in connection with purely brick or stone buildings be eliminated, giving as it does a minimum of cost and weight when considered in connection with its probable life, reliability, strength, adaptability, neatness, and appearance. If the insides of the buildings are to be lined for the sake of cleanliness, the author is of opinion that opalite or crystopal tiles are very much superior in appearance, cleanliness, and expense, to the ordinary glazed brick. In connection with the subject of cleanliness and internal appearance, a plea is here made for the boiler-house. In many stations having splendid engine-rooms, the boiler-houses are unnecessarily dirty, gloomy, and apparently neglected, for some unknown reason. This undoubtedly has a depressing effect on the human element of the boiler-house, with a derogatory influence on the

general efficiency. The author does not admit that under modern conditions there is the slightest excuse for the boiler-house to be any dirtier than the engine-room. It is by far the most important part of a generating station, and should be treated as such, both in design and management.

Corrugated Iron Buildings.

A very great deal can be said in support of corrugated iron buildings throughout. As regards their life, it is undoubtedly shorter than that of other buildings, but the question to be considered is whether their life, though short, is not amply long enough. In any case it is merely a question of putting their shorter life and more expensive upkeep against the considerable difference in price. In most cases the steel skeleton building with corrugated iron walls is the right form to use if the locality of the generating station does not require æsthetic consideration.

Chimney Construction.

The engineer has the choice of three main types, viz., brick, reinforced concrete, and steel. All the peculiarities of brick chimneys are well enough known, and providing that great care is taken to spend some weeks after the work is finished in gradually heating up the chimney, there is, perhaps, nothing to beat it. The unsightly and apparently dangerous cracks are more often due to bad treatment than to faulty design or settlement.

An interesting modern development is the reinforced concrete chimney. The author had occasion to go very carefully into the merits of this form of construction and came to the conclusion that there is a good deal to be said for it, because owing to the simplicity of form, the before-mentioned disadvantages of reinforced concrete should not have an opportunity of attaining importance.

Two of the firms which have built most of the reinforced concrete chimneys in existence were of opinion that such chimneys would stand a temperature at the base of 1,500 degrees F., without harm or deterioration, and claim that the usual fire-brick lining is unnecessary, as they are mostly built with a separate internal concrete shell extending part of the way up.

The author was surprised to find that in comparing steel chimneys with brickwork the result is so very doubtfully in favour of the steel chimney. Dealing with chimneys from 120 to 200 ft. high, the steel chimney equals, and in some cases exceeds, in cost of the brick one, if the foundations are excluded, but as so many modern generating stations are built on very bad ground, the foundations have to be particularly good in both cases so that the lower cost of foundations for the steel chimney is not in any proportion to its comparative lightness. On inquiry from several users of steel chimneys, it was found that their cost of upkeep is quite a considerable item, if they are maintained in a reliable condition.

The following are examples of comparative costs :—

Height and diameter	220 ft. by 11 ft.	80 ft. by 9 ft.
Brick chimney	£1,550	£400
Concrete chimney	1,300	470
Steel chimney	1,460	450

In reference to chimneys generally, the great importance of a smooth interior is often lost sight of.

Plant in Relation to Planning.

There is very little choice left under the present conditions in this country, and as water power in any quantity is very rare, the case is limited to the consideration of gas or steam-driven prime movers, and in regard to the latter the question is reduced to the consideration of the reciprocating steam engine *versus* the steam turbine.

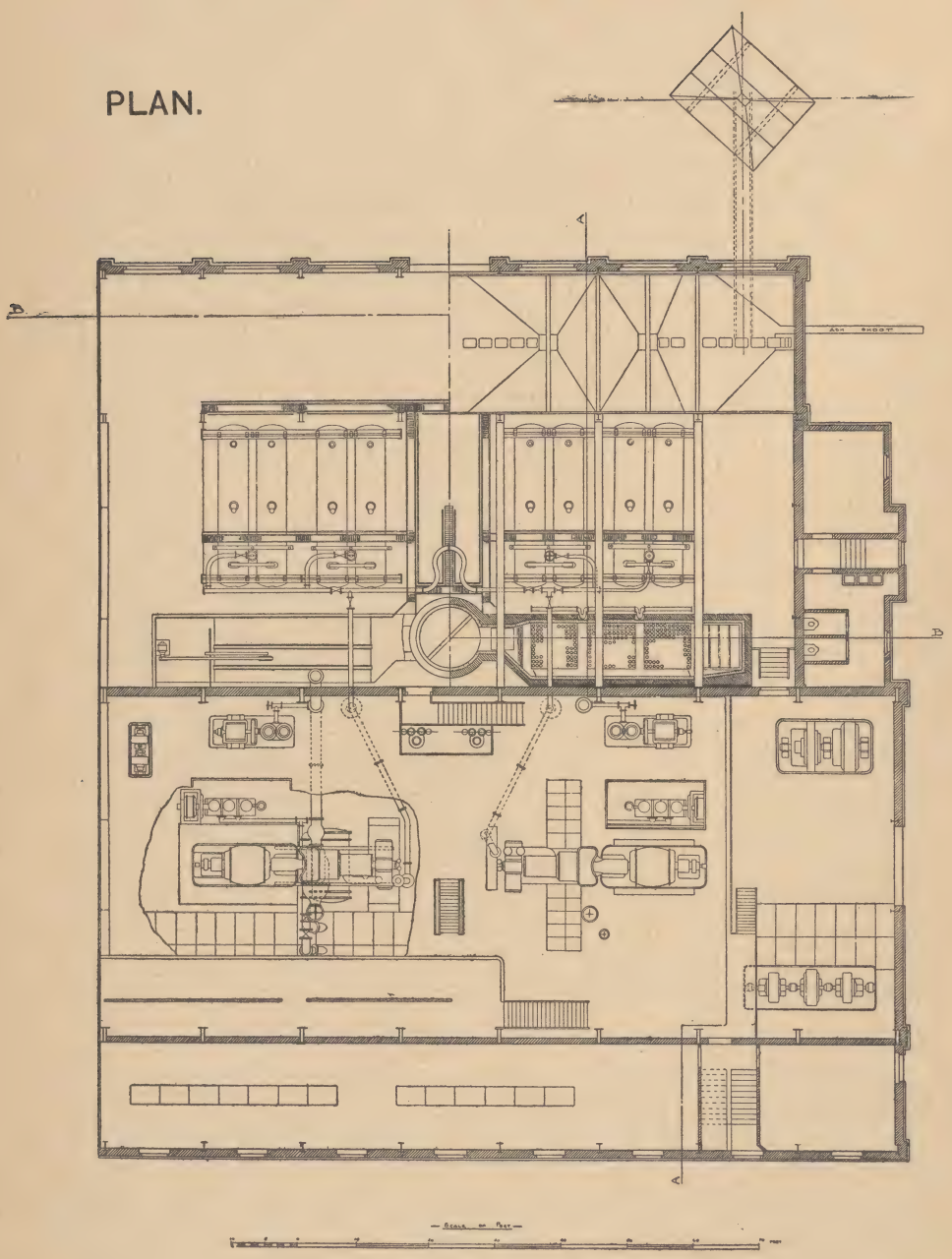
On inquiry there seems to be no doubt as to the superior efficiency of the steam turbine, but in view of the common accusations of high cost of upkeep and liability to breakdown, visits were made to several turbine plants in the country, and the result was distinctly in favour of the turbine on all points, and as regards reliability, the vertical impulse type was equal, if not superior, to the horizontal reaction type.

Only two classes of boilers, viz., the shell type (with ample economizer plant), and the water-tube type need to be considered for the larger electric stations. A well-designed Lancashire boiler is about the best of its type, but in comparing it with the water-tube boiler it appears, in the author's opinion, to fall behind the latter mainly on question of first cost, space, and the difficulty of making a good boilerhouse arrangement of Lancashire boilers to fit in with a good engine-room lay-out of steam turbines.

There are several well-known types of water-tube boilers, all of which are practically equal in first cost and efficiency under test conditions, so that as far as economical coal bills have to be considered, it matters little which of the best types be chosen, but it behoves the engineer to look further than the merely efficient design of the boiler and first cost. The type of boiler should be chosen after careful consideration of the following points :—Size of boiler and space occupied. Arrangement and size of grate and size of combustion chamber in relation to the quality of coal dictated by local conditions. Adaptability to a practical and efficient arrangement of superheater. Simplicity in arrangement of tubes. Ease of inspection. Accessibility and cost of cleaning. Liability to priming. Cost of repairs and maintenance.

In view of the foregoing, the conditions of manufacture under which the boiler is made, the standing responsibility and reputation of the firm who make the boiler, the ease and speed with which standard parts can be got for repairs and maintenance are very serious considerations which, in the author's opinion, should go a very

PLAN.



long way in settling the particular plant to be used, as such matters have a very important bearing indeed upon the total commercial efficiency of the plant, even though the mere test efficiencies may point to another deduction.

The development of the water-tube boiler has undoubtedly rendered the installation of economizers of less importance, and in particular, where cheap coal is being used they have a difficulty in justifying their extra cost, At the same time the author recognises that in connection with turbine plants, where the condensed water is at such a low temperature, they have their uses in protecting the boilers from the well-known bad effects of a cold feed. Under ordinary circumstances economizers should be put in and careful attention given to their position and size, to give the best results from the commercial rather than the strictly technical point of view.

Brickwork Settings.

The settings both in detail and arrangement do not always receive that strict attention which is their due. So far as their arrangement is concerned the principal rule to follow is to design the settings as compact, stable, and accessible as possible, and to shorten the lengths of all flues and passages to an irreducible minimum, giving good, sweeping, smooth curves at every change in area or direction. Much trouble has been caused when the flues have been roofed with brick arches by the expansion and contraction of the latter, causing the side walls to bulge, loosening the brickwork, and sometimes causing the collapse of the lining. Heavy T irons and cast-iron plates get over this difficulty, besides providing a smoother surface. To reduce the loss of heat by radiation is an additional reason for compact design. Ordinary brickwork is quite a good conductor viewed from this standpoint and a very rough estimation of the effective radiating area in an ordinary boiler plant will emphasize the loss of heat that takes place from this cause alone. Although the loss by radiation appears comparatively small in ordinary boiler tests, it must be borne in mind that such tests are usually made at or near full load, and that, therefore, a constant loss like that of radiation assumes a much greater importance in the practical case of an ordinary generating station where the boilers are often the reverse of fully loaded for the greater part of the time. Two practical devices suggest themselves in this connection; one is to build the settings with hollow walls packing the cavities with a suitable non-conducting substance, and another to face the outside with glazed bricks. As an example of loss of temperature that may take place due to the above causes the author may mention a case with which he is well acquainted. The economizer is separated from the boilers by a flue about 50 ft. long, and although the brickwork of the latter is in good condition there is a difference in temperature of the gases in this flue measured at two points 43 ft. apart of 100 degrees Fahr.

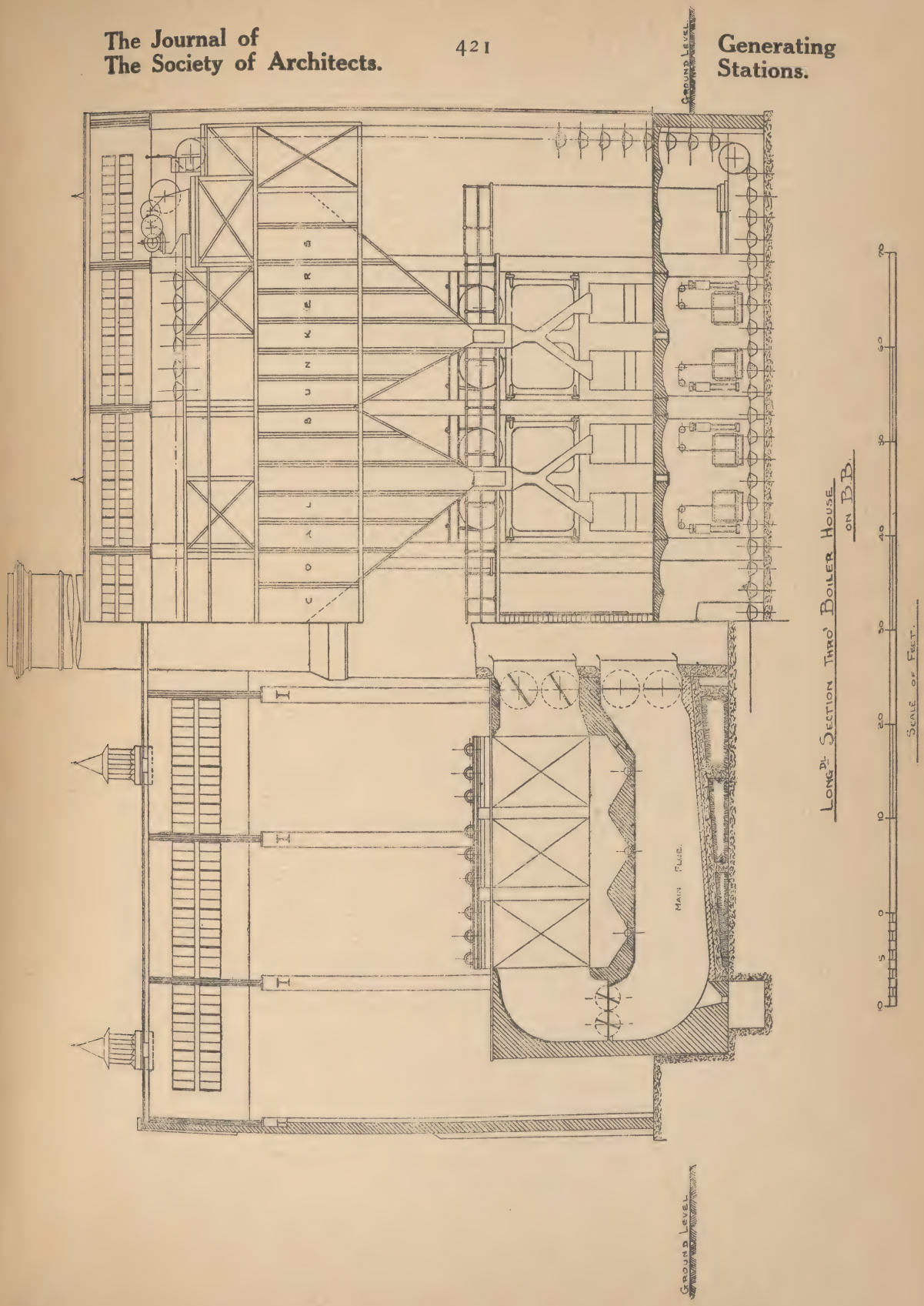
Built-in fittings, particularly dampers, must be carefully designed with a view to freedom from sticking in working, due either to their position, settling of brickwork, expansion or contraction. Instead of being as rough as they often are they should be most carefully fitted. Arrangements should be made to stop the leakage usually considered inseparable from dampers. The best cure for this is the use of butterfly dampers. Expansion being a considerable factor in such fittings, sufficient clearance must be left to ensure easy working when the boilers are being forced, as the inability to open or close a damper may have very serious effects.

During construction the following points should be borne in mind. The bricklaying should be done by men experienced in the construction of furnaces because the requirements are not the same as for ordinary building, and however good the work may be originally, defects due to simple errors of omission and commission may be very expensive to correct afterwards, and such errors have resulted in the shutting down of a station. In all cases the joints should be as close as possible, and the cutting of bricks should be avoided. Where it is absolutely necessary, as, for example, the closing of an arch, the cut surface of the brick should be rubbed smooth to ensure a close joint. Great care should be taken to render all surfaces smooth, as the effect of rough surfaces on the draught are often underestimated, and as far as the furnace is concerned, careless laying militates against durability under the effect of the fires. Certain schemes of reinforcing the brickwork by means of steel network in the joints, etc., are in the market, and there is much to be said for their consideration.

Mechanical *versus* Natural Draught.

This question is likely to remain an unsettled one. If mechanical draught is decided upon by any designer, he has to choose between an induced draught system, and what is called forced draught.

Speaking generally of draught, the installation of a chimney of a capacity sufficient to deal with the normal full load of the plant is recommended because this method is, after all, the most efficient, simple, and reliable, and appears to be cheaper in first cost. It is often contended that a chimney is inefficient, and that more good could be obtained by using air heaters, etc., for extracting heat from the gases, and using a mechanically-produced draught. The engineer will find, however, that the cost of these heaters is by no means negligible, and moreover, when he comes to consider mechanical stokers, sundry practical difficulties arise. It should be understood that the author is not condemning the use of mechanical draught for all circumstances ; the above recommendation only refers to the normal conditions while a power station is going easily. During the erection of extensions nearly all power stations are pressed, therefore it is recommended that everything should be constructionally ready for the installation of a pressure or induced draught,



LONG.DL SECTION THRO' BOILER HOUSE
ON B.B.

not in recognition of the superior economy of such apparatus, but in appreciation of their temporary utility in producing a desirable margin of power.

Coal Handling Plant.

It is only after a power station has attained considerable size that any superiority in the mechanical or automatic handling of coal is made manifest. As this paper refers to larger stations they will be considered as necessary, and it will be taken for granted that a railway siding runs into the station premises, with facilities for feeding the said sidings with waggons from the wharves if not near enough for transporters.

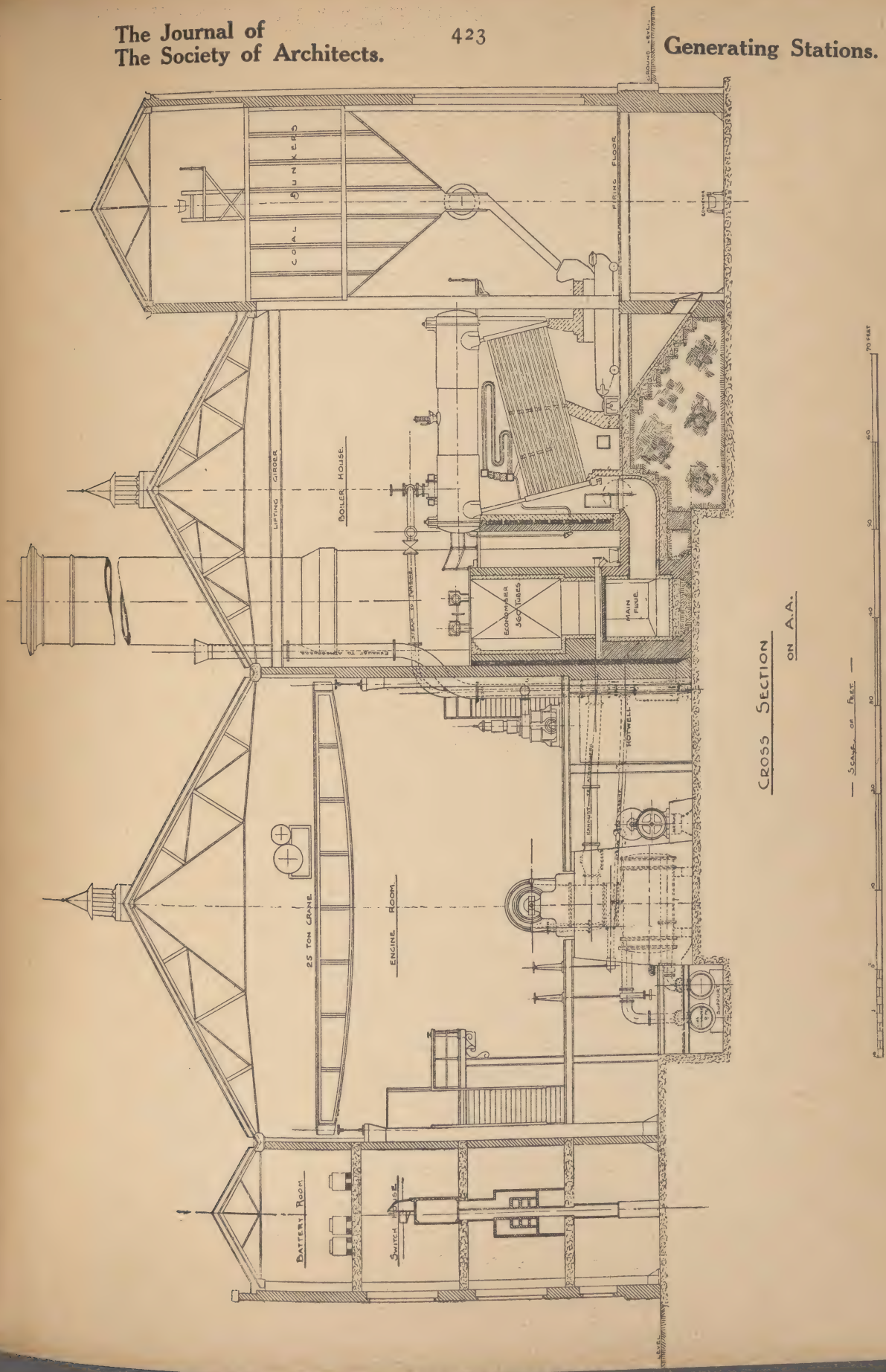
The first questions to consider are the methods of filling the feed hopper, and the position of the latter relative to the necessary conveyor. A not uncommon difficulty in made-up ground is the limited depth to which one may go with the hopper. If the required depth is likely to be below the water level it is desirable to sink a water-tight cast-iron tank and line the same with concrete. As to the means of emptying the waggons there are four methods available, viz., by hand, bottom door emptying, end tipping, and side tipping. The choice between the last three necessarily depends upon the type of waggons available and the speed of service.

The conveyor is undoubtedly the most interesting and important part of the equipment and much depends on the type chosen. Leaving the worm and belt conveyors out of the question for this work, practically limits consideration to the well-known bucket type, and the equally familiar scraper type. The author's opinion favours the bucket type in spite of its considerably higher cost, on the grounds of less cost in working.

As to the bunkers, although steel bunkers are convenient, light, and in more general use, yet a case is clearly made out for the serious consideration of reinforced concrete. An estimate of the probable saving in cost obtained from four known cases approximates 25 per cent. for equal capacities.

In designing the bunkers, special attention should be given to the arrangement of the compartments with a view to storing different classes of coal to be easily drawn from by the engineers at their discretion. Such facilities are great convenience and have a considerable effect on the total economy of the station.

As regards the measuring of coal, the conflicting results obtained where the weighing system is in vogue, and the impossibility of tallying, however accurate the machines, decide in favour of the volumetic measuring as against weight measurement. The results thus obtained will compare more consistently. This only refers to boilerhouse measurement, and not to the measurement of coal supplied to the station, which, of course, must be weighed.


COAL BUNKERS
FIRING FLOOR
LIFTING GIRDER
BOILER HOUSE
ECONOMISER 360 TUBES
MAIN FLUE
HOTWELL
25 TON CRANE
ENGINE ROOM
BATTERY ROOM
SWITCH GEAR
CROSS SECTION
ON A.A.
SCALE OF FEET
70 FEET

Mechanical Stokers, etc.

So far as use with water-tube boilers is concerned, the author favours chain grate close-linked stokers.

Ash and Soot Handling Arrangements should be designed so as to keep ash and soot out of, and away from the boilerhouse proper. The ash basement under the boilers or firing floor is the proper place for dealing with such refuse, and it is quite simple to load it into the conveyor, with a minimum amount of scattering or dust. The cleaning of the economizers ought to be arranged for in the same way, giving easy connection with the conveyor.

The comparative value of steam and electrically driven feed pumps is another subject that has aroused constant controversy, and there is still much difference of opinion. Probably the best policy to follow is to start the first instalment of plant in a station with steam pumps and use electrically driven pumps for the extensions. Although feed pumps are more frequently located in the boilerhouse there is a great deal to be said for situating them in the engine room. The arrangemens of feed piping can often be simplified and made more direct, and the pumps are likely to receive more attention than they would get at the hands of the firemen. It is important in such cases to arrange for convenient regulation from the boilerhouse.

The Engine Room Lay-out.

In dealing with the lay-out of the engine room with turbine plant of the horizontal type, the first thing is to decide whether the axis of the turbines shall be parallel to the length of the engine room or across it. With the larger sizes of turbines of 1,500 k.w. and above, and a single row of boilers parallel to the engine room, considerable space can be saved by the first arrangement. Before taking the utmost advantage of this, however, it is well to forecast future possibilities in the way of others types of plant, such as vertical turbines, gas engines, etc., as the span and height of the crane may otherwise greatly handicap the choice of plant required for extensions. With regard to the position of the condensing plant, this is now almost universally situated immediately below the turbines, on account of the importance of reducing the frictional resistance to the flow of the exhaust steam, and it also minimises chances of leakage by diminishing the number of joints. The condensers can either be placed lengthwise with the turbines or across the former gives a very compact arrangement with the turbines along the length of the engine room. In condensers of the *contra-flo* type, however, the steam inlets are situated eccentrically, and such condensers must therefore be placed across the turbine.

With regard to the air pumps there are two or three modifications to choose from, viz., the simple air pump or two separate pumps, one for dealing with air and vapour, the other for the water, or thirdly, a vacuum augmentor in combination with the air pump. The absolute pressures attainable respectively in the condenser

decrease in the above order, the extra complications being intended to increase the density of the air and vapour, before it is dealt with by the air pump, which is done by cooling in the one case, and by a preliminary compression with a steam jet pump in the other. The practical advantage of the possible increase in vacuum by the use of such methods is rather doubtful except, perhaps, in the case where the available amount of cooling water is limited and its temperature is high.

It will also be found that this apparatus requires to be below the level of the condenser, and that the necessary depth cannot always be given owing to complications of sewers and liability of flooding. Facilities for the cleaning and replacement of tubes should not be lost sight of in the design.

Circulating Water Pipe System.—To reduce the power required for pumping the circulating water to a minimum, the outlet end of the discharge pipe should be below the level of the source of supply, so that the arrangement forms a species of syphon. Precautions are necessary to deal with air liberated from the water or leaking in at joints, if the top of the syphon is far above water level, otherwise the syphonic action will soon cease. The advantage of the syphonic effect is, of course, limited to about 30 ft. (practically it may be found to be much less), and in cases where the water has to be raised to a considerable height, the recovery of power rendered possible by the use of turbines situated near the lower end of the discharge pipe, and driven by the water on its return merits consideration. As the integrity of the circulating water system is of such vital importance in a steam turbine installation, every care should be taken in the laying and jointing of the pipes, and the latter should be specially protected from corrosion if the ground is bad. Trouble has been experienced in cases where cast-iron pipes have been embedded in solid concrete with breakage, due, probably, to expansion and contraction with the varying temperatures of the discharge water. A form of pipe which possesses considerable advantages for this work is one constructed of reinforced concrete. Such pipes are cheap and durable, and can be moulded practically in any desired shape. In any case substantial foundation must be provided for the pipes to obviate subsidence, and if the ground is soft, piling becomes necessary.

Main Steam and Feed Piping.—The author desires to advance a plea for reducing duplication of pipe work to an absolute minimum and securing reliability by simplification, thoughtful design, careful erection, and the use of the very best materials. The simplification and reduction of the amount of steam piping has its effects on the coal bill, while the reduction in the number of valves and joints is correspondingly beneficial in economy of maintenance. The diameter of the main steam pipes can advantageously be reduced when used for super-heated steam. When turbines are used there are additional reasons, as the flow of steam is more uniform and the retention of temperature of super-heat is of greater importance than a slight reduction in steam pressure.

Generators and Ventilation.

About the Generators themselves. The modern standard designs of the best makers are very similar and their differences do not entail any special features in the design of a station. The question of efficient ventilation has risen into great prominence since the advent of the turbo-generator, and ducts are generally formed in the concrete foundations for this purpose. If possible it should be arranged that these ducts lead from a cool space in which the air is still, dry, free from oily matter, and has had time to deposit some of its dust. If air is drawn specially from outside the building, the position of its entrance should be carefully considered in connection with this question of dust, and filters may be used.

Auxiliaries.—The use throughout a generating plant of continuous current motors for driving auxiliaries is recommended in cases where direct current is to be distributed in the locality of the generating station, as it is very convenient to have a storage battery reserve for this class of work and economical adjustment of speed has advantages.

Switchgear.

In moderate and large-sized stations the best system is to isolate the whole of the high tension gear in special chambers, the operation being effected from a gallery overlooking the engine room through the medium of electrical control. The cellular type of board is to be preferred, and as much space as can be afforded should be allowed for the gear. This is a strong reason for arranging the switch chambers along the side of the engine room, rather than across the end ; besides this method allows of some simplification in the connecting cables. The busbars should be divided by means of section switches, so that any part may be made dead for inspection or repair without interference with the supply. Too much thought cannot be bestowed in obtaining a safe working arrangement. In a system which is being carried out by the author the doors of the compartments containing the feeder isolating switches are provided with double locks. One key will be kept by the station department and one by the mains department. Whenever any cable is required to be disconnected for testing or repair, the isolating switches will be opened and the compartment locked by both parties. The cable then cannot be made alive again except in the presence of both the departments concerned. Facilities for earthing parts of the gear should be provided as a safeguard against their becoming charged by leakage or otherwise, while persons are working on them. It is almost universally acknowledged that oil break switches are the only type that should be used for breaking high tension circuits, and their breaking capacity should be chosen with reference to the total K.V.A. capacity of the station on a momentary short circuit.

The Society of Architects.

Examination, April, 1908.

Section III.—PRACTICE. Subject c. QUANTITIES AND PRICES.

WORKED ANSWERS by W. R. MALLETT, F.S.I. Examiner.

Question 1.

(a) *Square or cube the following dimensions, showing your working out in full :—*

6/3/2·8 / 6·6 ——

10 / 2 / 4·6 / 3·4 ——

2 / 19 / 1 / 15·0 / ·11 / ·3½ ——

12·0 ——

Digging

10·0 ——

paving.

(b) *Give the order in which the trades should be dealt with in an abstract, and your reason for the same.*

Answer 1.—(*a*).

(*a*) 6/3/2·8 / 6·6 —— 312·0

6/6·6 = 39·0
3/2·8 = 8·0
312·0

10 / 2 / 4·6 / 3·4 —— 180·0

12/3·4 = 40·0
4·6
160·0
20·0
180·0

2 / 19 / 1 / 15·0 / ·11 / ·3½ ——160·5

15· 0
2/·11 = 1·10
15· 0
12· 6
27· 6
20/·3½ = 5·10
137· 6
13· 9
9·2
160· 5

12·0 —— 190·10

Digging.

4·5
4·5
22·5
180
20·25
·7854
8100
10125
16200
14175
15·904350
12
190·852200
12
10·226400

10·0 —— 39·3

Paving.

·7854
10·0
10·0 100
2/78·5400
39·2700
12
3·2400

(*b*) A convenient order for the several trades is the following :—

1. Excavator and Concreter.
2. Drain Laying, &c.
3. Bricklayer, &c.
4. Mason (different stones distinct).
5. Slater and Tiler.
6. Carpenter.
7. Joiner and Ironmonger.
8. Smith and Founder.
9. Gasfitter, Bellhanger, Electric Light Engineer, &c.
10. Plasterer.
11. Plumber and Zinc Worker.
12. Glazier, Painter and Decorator, &c.

The abstract sheets should arrange the Trades in the same order as they will appear in the Bill of Quantities : they will then be cleared off seriatim and there will be no referring back to the early sheets. The general idea of the arrangement in both Abstract and Bill is to follow the order in which the works will be carried out, as far as possible, making the early parts provide for the construction of the building and the later parts to its finishing, fitting up and decoration.

Question 2.—*Take off the dimensions for an inspection chamber* 3′ 6″×2′ 3″ *in the clear and* 10 *ft. deep, to invert of channel, below the surface ; providing what you consider suitable.*

Answer 2.

Inspection Chamber.

		3·6	2·3	2/ 2	Extra to 4½″ ring arches
		·9	·9	——	over channel and drain
		·9	·9		inlets, etc.
		——	——	1	Do. to oversailing courses
		5·0	3·9	——	at top, to reduce to size
5·0	Dig, part two	——	——		of frame to cover.
3·9	throws, to I.		10·0		3·6
10·6	chamber 10′ 6″	concrete	·6		3·6
——	deep wheel 1		——		2·3
	run and spread over		10·6	11·6	Render in P. ct. 2·3
	surface		——	3·0	round bottom of ——
1	Allow for poling, boards, and strutting, &c., and for staging as may be necessary.			——	chamber, avgd. 11·6 —— 10·0
					3·0
1	Do. for filling in earth, etc.				·6 3·6
——	to the brickwork as it is built.				—— ——
				11·6	Extra only to neatly 6·6
5·0	P. cement concrete, in floor			6·6	struck jnt. in ce- ——
3·9	and foundations averaged			——	ment above do.
·9				8	Messrs. —— & Co.'s C.I.
——				——	step irons and building in
2/ 3·6	Benching up in do., and				where directed.
1·4	rendering in cement, and			1	Messrs. —— & Co.'s No. 3
——	include rounded edge next channel.			——	gald. C.I. heavy pattern hinged cover and double channel frame set in cement, the cover in composition, with locking gear, &c., complete.
4·0	6″ diam. white enamelled				
——	half-round channel, bedded and jointed in cement.				
2	Extra only to junctions on				
——	do.			2	Lifting keys for do.
1	Messrs. —— & Co.'s 6″ white			——	
——	enamelled No. 3 Interceptor trap, with easy outlet, and inspection arm with S.W. cover set in cement, the trap to be bedded on concrete.			1	Messrs. —— & Co.'s No. 4
				——	gald. C.I. air inlet ventilator with mica flaps, &c., complete, fixed with molten lead joint to iron pipe.
				4·0	4″ dia. C.I. gald. pipe fixed
			5·0	——	with pipe nails.
			5·0	1	4″ S.W. bend and fixing
			2·3	——	with cement, joints, &c.
14·6	1 B. of Fletton bricks		2·3	2·0	4″ diam. S.W. pipe drain
9·9	in cement, side		——	——	bedded on concrete for air
——	walls all round.		14·6		inlet, dig, fill and ram, &c.
			——	1	Cut hole through 9″ brick-
				——	work for do. and m.g. in cement.

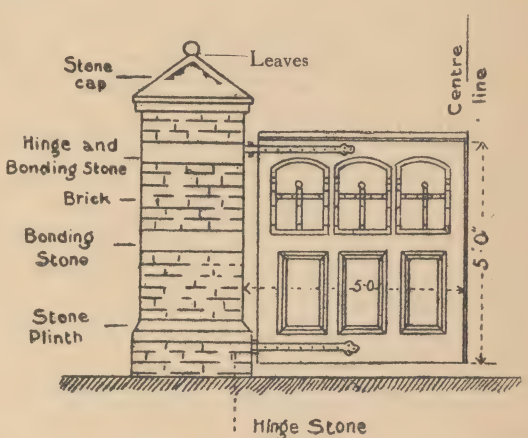
Question 3.—*Write the dimensions for bonding and hinge stones and stone caps to gate piers 2′ 3″×2′ 3″, and oak gate between, assuming suitable dimensions, with fittings, etc., at your discretion.*

Answer 3.

Gates and Piers.

Stone all taken net., allow for waste, &c.

		2·3
2/2·9		·3
2·9	Box ground Bath	3
·6	stone plinths to	—
—	piers.	2·9
2/2·9	Labour to bed, top and	
2·9	bottom.	
2/4/2·9	P. wk. sides.	
·3		
2/4/2·6	Sk. wk. splay.	
·4		
2/4/ ·6	Mitre to do.	
2/ ·10	Add stones for bottom	
·9	hinges.	
·6		
2/ ·10	Bed.	
·9		
		.10
		·9
2/2·4	Half-joint.	·9
·6		—
—		2·4
2/ ·10	P. wk. face.	
·6		
2/ 1	Letting in fangs of hinge hooks and cementing.	
2/2/2·3	Box gd. stone a.b. bonder	
2·3	and hinge stones.	
·6		
2/2/2·3	Bed.	
2·3		
2/2/4/2·3	P. wk. faces.	
·6		
2/ 1	Letting in fangs of hinge hooks and cementing.	
2/2·9	Bath stone a.b. caps.	
2·9		
1·8		



2/2·9	½ bed bottom.
2·9	
2/4/2·9	Molded wk. sides.
·4½	
2/4/ ·6	Mitre to do.
2/4/2·4	Throating.
2/4/1·5	Sunk wk. stopped splays.
1·8	
2/4/2·0	Mitred angle to do.
2/ 1	Forming ball finials to do. with leaves on mitre (see sketch), under, &c., to detail complete.
2/4·9	3″ oak framed gate in two
5·0	leaves of six panels each, bottom panels molded both sides and upper formed with arched heads to panels, and with 2″×2″ turned balusters and rails and ball finials, &c., as indicated in sketch, and worked to detail drawing, hung folding complete.
2/5·0	Labour to rebated and beaded folding joint on do. (one leaf).

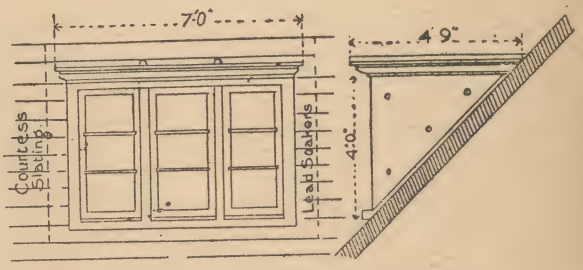
2/4·9	Oak molded capping out of $4\frac{1}{2}'' \times 3''$, worked to detail and include groove and tongue to top of gate.		1	36" W.I. monkey-tailed bolt of appd. pattern, japd. and fixed complete.
2/1	Splayed ends for folding joint.		1	Messrs. —— & Co.'s No. 1 patent self-acting "fall down" gate stop and fixing in cement concrete, 1′ 0″ × 1′ 0″ × 1′ 0″ complete, and 4 os.
2/2/5·0 5·6	Wax polishing on oak work.		2/1	Do. do. No 4 gate catches with balance weights, and fixing in concrete as in last item, and 4 os.
2/1	Pairs of Messrs. —— & Co.'s 706 W.I. strap hinges, 36" long, with ball shaped pins; best quality, with hooks and steps, fitted and secured with bolts and nuts, &c. 4 os. on do.		1	6" 2-bolt suitable m. lock with brass bolts and malleable iron japd. ring handle and plate and furniture both sides, p.c. value 12/6 the set.

Question 4.—*Take off the quantities for the plumber's work to a Dormer window—top, sides, etc., giving a rough sketch, with figured dimensions, of what you propose.*

Answer 4.

Dormer.

		4·9	7·0	17·0	Edge of lead dressed round flat. 7·0 5·0 5·0
		·1	·1		
		·2	·1		
		·9	·4	2/4·0	Add at sides to frame. 17·0
			·4		
		5·9	7·10		
7·10 5·9	6lb. milled lead, dressed and laid as flat.				
2/½/4·6 4·0	add sides		7·0 ·4 ·4		
7·8 1·0	add apron to sill.		7·8		
2/8/1·0 1·0	5lb. lead soakers at sides.	·8 coarse ·4 lap	8½ 3½		
		1·0	1·0		
2	Ends of rolls bossed.				
2/4	Solder dots				



2/4·6	Copper nailing, tops of cheeks.
2/6·0	Add on slopes.
2/4·0	Add fronts.
7·6	Add apron to sill.

Question 5.

Draft a Bill, with the following items, giving pretty full descriptions and putting prices to them, applying in your district, which must be stated.

Rake out defective joints of old garden wall and re-point in cement. Iron bond, No. 15 gauge, 1½" wide.

Old pantiling stripped and relaid dry, lathing and allowing 20 new tiles to a square. Adamantine clinker paving, bevelled and laid herring bone in cement.

Kentish Rag (or similiar) stone walling random coursed. Bath stone and labour, in plain and molded work averaged. Fir framed and pinned in roof trusses. Honduras, mahogany counter top, 1″ thick, polished.

¾″ iron espagnolette bolt, 6′ 6″ long, with brass fittings. Cast-iron columns fixed. Iron circular stairs 3′ 6″ diameter, with handrail, etc., complete.

Milled lead and labour in cisterns and sinks.

No. 15 V.M. zinc on flats.

Ordinary bells (no pulls), pneumatic bells, electric bells. Preparing new walls, sizing and hanging ordinary papers. Distempering new work in common colours.

Answer 5.

Bill of Quantities.

PRICES APPLY IN THE NEIGHBOURHOOD OF LONDON.

	ft.					£	s.	d.
			supr.	Rake out all mortar joints to old garden wall and repoint in cement, mortar gauged, three of sharp sand to one of Portland cement ..	3*d*.			
			run	Hoop-iron bond 1½′ wide, No. 15 gauge, tarred and sanded, and properly hooked at angles, etc.	1*d*.			
sqrs.			supr.	Strip old pantiling to roof, re-lath with yellow fir pantile laths, secured by cut nails, and re-lay the tiling dry, allowing 20 new tiles per square to complete	20/-			
yds.	ft.		,,	Paving with Adamantine clinkers with bevelled edges, laid herring-bone to proper falls, bedded and grouted in Portland cement	14/6			
			cube	Stone walling of Kentish ragstone, random coursed, and built in greystone lime mortar with bonding stones, two to a yard super ..	20/-			
			,,	Monk's Park Bath stone in plain quoins, jambs, lintels, etc., and molded strings, hoodmolds, etc., including all labours, averaged	6/-			
			,,	Fir framed and pinned with oak pins, in roof trusses, including hoisting and fixing, complete	3/6			
			supr.	Inch Honduras mahogany, wrot one side, and fixed as top to counter, secured by secret screws, glued and blocked on underside, complete, and include for polishing	2/-			
		No.		¾″ iron Espagnolette bolts, 6′ 6″ long, with brass fittings and handle, etc., fitted and fixed, complete	7/6			
cwt.	qrs.	lbs.	wt.	Cast-iron columns, with molded caps and bases, including patterns, hoisting and fixing, complete	12/6			
	ft.		run	(Height) Iron spiral staircase 3′ 6″ diameter, Messrs.—— & Co.'s improved pattern, tread riser and spandrel in one, handrail and one bar to each step, and landing at top, and include for fixing, etc., complete	16/-			
cwt.	qrs.	lbs.	wt.	Milled lead and labour in dressing and fixing in cisterns and sinks	30/-			

					£	s.	d.
ft.		supr.	V.M. zinc, No. 15, laid on flats, by Messrs. —— and Co., on their system for allowing for expansion and contraction, with all cappings, etc., etc., complete	9d.			
	No.		Provide and hang bells on strong spring carriages, copper wires, brass cranks, etc., complete; the wires to be in concealed zinc tubes where in plastering.	10/-			
	,,		Pneumatic bells, to be executed by Mr. ——. with metallic tubes, ivory press buttons, brass-mounted indicator frame, with glass front, etc., complete	15/-			
	,,		Fit up electric bells, with No. 20 tinned copper wires, insulated with india-rubber covered in cotton, in steel tubes where concealed in plastering, Leclanché battery charged, and pushes of an average p.c., value 2/- each, indicator frame with mahogany and glass front and gong, etc., etc., complete	20/-			
	,,		Pieces, preparing and sizing new walls and hanging ordinary papers	1/-			
yds.		supr.	Claircolling and distempering new walls in common tints to approval	3d.			
				£			

Donations and Gifts to the Library.

The Hon. Librarian acknowledges with many thanks the receipt of the following books.

Title.	Presented by.
The Building Mechanics Ready Reference (*Richey*) ..	Chapman & Hall.
House Painting (*Labin*)	,, ,,
The Home Beautiful (*Jennings*)	Greening & Co.
Concrete: its uses in building (*Potter*)	B. T. Batsford.
A Chart of the Arts of England	Lenygon & Co.
Transactions of the St. Paul's Ecclesiological Society, Vol. VI., Part 3	The Society.
Modern Mansions (*Bradshaw*)	L. Bradshaw.

A new Wesleyan Church has been opened at Chelston, Torquay. The Church is situated in Old Mill Road, and is of red local sandstone, with white Beer stone dressings. Seating accommodation is provided for 400, the woodwork being red pine throughout, with the exception of the rostrum and seat ends, which are of pitch-pine. The architects of the building are Messrs. Rowell, Sons, & Locke, Newton Abbot. The total cost of the Church and furnishing will not, it is estimated, fall far short of £2,000.

For the proposed Intermediate School for Boys at Cardiff, thirty-four sets of designs were sent in. The assessor, Mr. Leonard Stokes, F.R.I.B.A., has awarded the first premium of £50 to Messrs. Teather & Wilson, Cardiff; the second of £40 to Messrs. James & Morgan, Cardiff; and the third of £30 also to Messrs. Teather and Wilson, who have been appointed architects for the School. It is understood that the successful architects will not be paid the third premium.

The Society of Architects.

Examination, April, 1908.

Section IV.—SANITATION.

WORKED ANSWERS by C. H. MEAD, M.R. San. Inst., Examiner.

Question 1.—*On the accompanying plan show the method you would adopt for draining the loose boxes and stalls, and connecting to external drainage. Also give detail sketches to fully explain your answer.* (See pages 434, 435.)

Question 2.—*Discuss the relative merits of the following soils:—sand, gravel, peaty, clay and chalk. What is ground air?*

Answer 2.

Sand is good and healthy if pure and dry, but not under other conditions, as, for instance, when the subsoil water is high and impurities like organic matter are present.

Gravel is healthy except in hollows where the ground water is high. Gravel hillocks are, perhaps, the healthiest of all sites.

Peaty lands have a great drawback in that they contain much vegetable matter and are therefore unhealthy.

Clay, especially a clay slope, is considered to be healthy, if well drained, but otherwise damp and cold.

Chalk is healthy if permeable and free from clay.

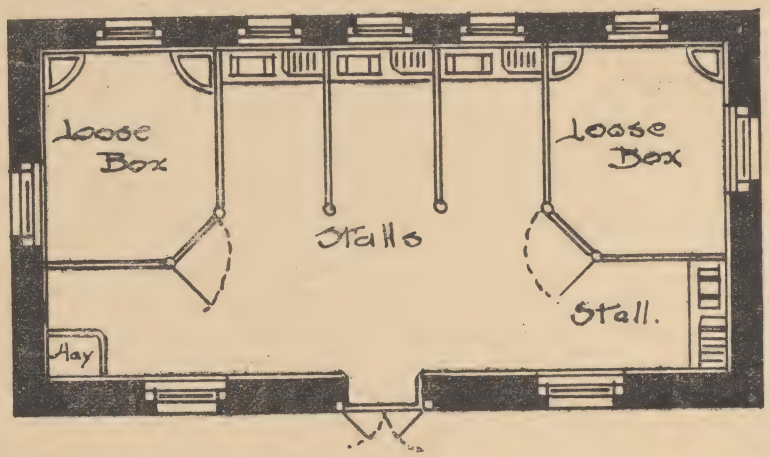
Ground air is the air in the ground or soil between the level of the subsoil water and the surface. It is present in all soils, varying greatly according to the character of soil, climate, rainfall and season.

Question 3.—*Draw a plan and section of an inspection chamber having two branches entering on each side, also intercepting trap and fresh-air inlet.* (See page 437.)

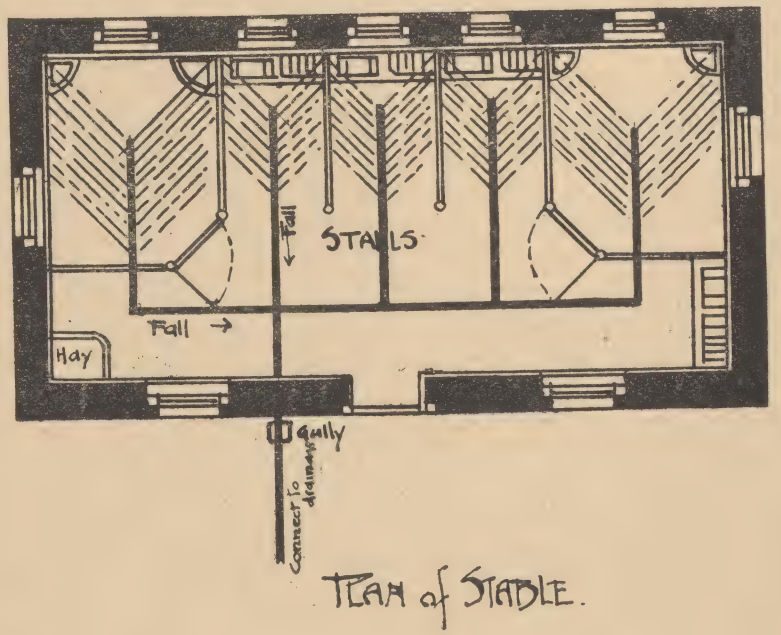
Question 4.—*Write a specification of the cold water supply of a house, from the connection to water main in roadway to cistern in roof, and from these supply the following points:*—FIRST FLOOR—*W.C., lavatory, basin and bath.* GROUND FLOOR—*Two W.C's., lavatory basin, pantry and scullery sinks, and kitchen boiler.*

Answer 4.

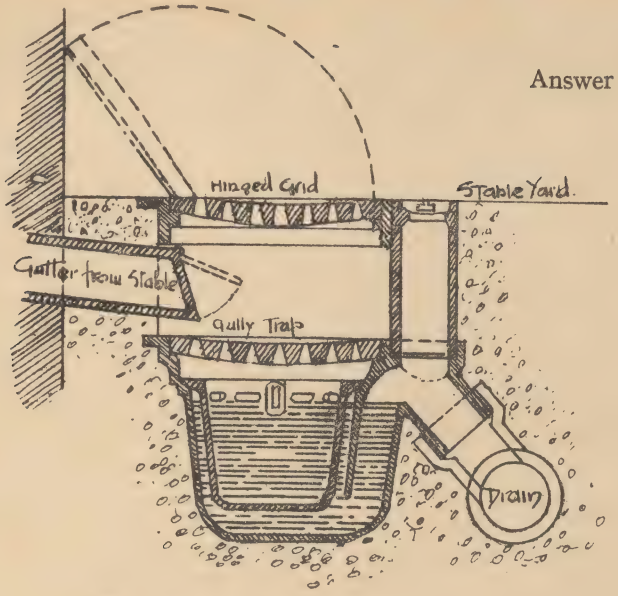
Water Supply.—The water supply to be in accordance with the water company's printed instructions and regulations, and executed to the satisfaction of their inspectors.


Loose Box
Stalls
Loose Box
Stall.
Hay

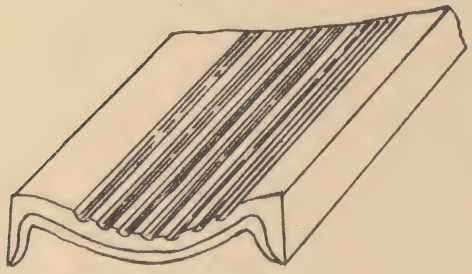
Answer 1.


Fall
STALLS
Fall
Hay
Gully
Connect to drainage
PLAN of STABLE.

Answer 1.



SECTION of STABLE GULLY



OPEN GUTTER.

GUTTER with COVER.

Give all requisite notices to the company and pay all fees.

Rising Main.—Dig up ground in road and through site, and connect to company's main, with proper ferrule and unions, carry on 1″ galvanized iron pipe to building as rising main, buried at least 2′ 6″ deep and surrounded with ashes or some other means of protection against frost. Fill in and leave the ground in good condition and remove and deposit where directed any surplus earth. Carry the 1″ rising main up to cistern in cistern-room and terminate with a high-pressure equilibrium ball-valve with copper ball and stem and bracket support under. Put in convenient position inside boundary fence a 1″ full-way brass stop-cock in cast-iron box and another just inside house at point where pipe enters.

Draw off from Main.—Take ½″ lead pipe, draw off direct from rising main and finish over scullery sink with strong screw-down brass bib-cock.

Cistern.—Fix a cistern on proper bearers. No. 1 200 gallon galvanized iron Braby's No. 14 gauge cistern. Cover same with 1″ matched and beaded ledged covers.

Safe.—Form safe under cisterns in 4 lbs. lead and 3″ wider than cisterns. Turn up lead 3″ all round.

Solder into tray an 1½″ dribble pipe carried through roof and soldered to a 6 lb. lead slate, and finished with a copper flap.

Cleaning-out Pipe.—Tap cistern and connect with brass union, and take an 1½″ lead cleaning-out pipe, kept as flush with bottom of cistern as possible, and carry through roof and solder to a 6 lb. lead slate, and terminate with a copper flap. Put to this pipe a full-way 1½″ stop-cock close under or near cistern, with an enamelled iron tablet labelled, "Stop-cock to cleaning-out pipe."

Main Service Pipe and Branches—Tap cistern and connect with 1″ union and washer, kept 1½″ above bottom and and carry down 1″ lead service pipe to lowest draw off. Put an 1″ screw-down brass stop-cock fixed near cistern.

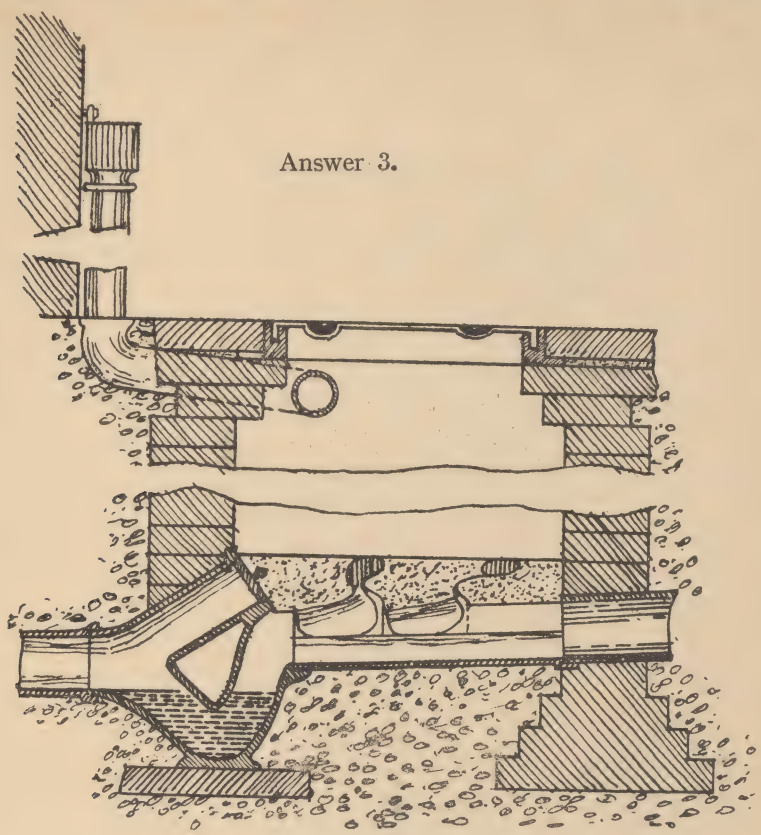
Branch off 1″ main with ¾″ lead branches and supply *First Floor*—W.C. cistern, lavatory basin, bath; *Ground Floor*—scullery sink, Pantry sink, two W.C.'s

Terminate scullery sink and pantry sink with ¾″ brass screw-down bib-cock.

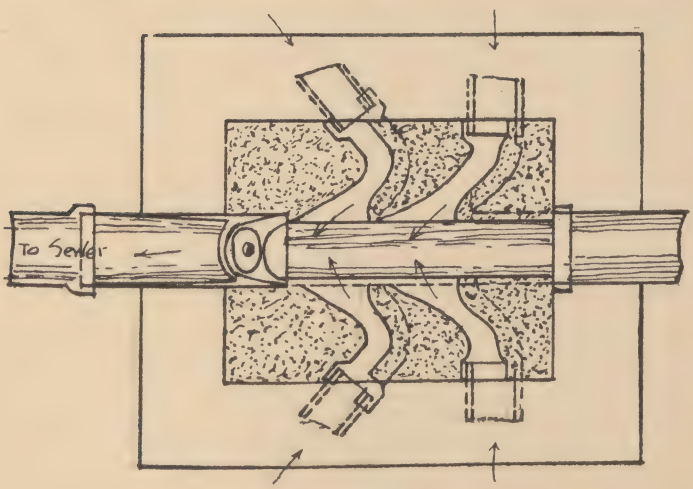
Supply to Kitchen.—Tap cistern and connect with 1″ union and washer and take a separate 1″ galvanized iron supply pipe down to kitchen to feed circulating boiler. Put an 1″ stop-cock under cistern.

Question 5.—*Give sketches showing how you would deal with the plumbing work and waste pipes generally from* (1) *a lavatory basin,* (2) *a bath on first floor,* (3) *a scullery sink.* (See page 438.)

Answer 3.



CROSS SECTION



PLAN

Answer 5.

Bath.
Alternative method outside Waste Pipe
carried up as Ventilator. and with head omitted
Lavatory Basin.
Scullery Sink

Mainly about Members.

We regret to announce the death, on July 14th last, of Mr. THOMAS FARRELL, of Sherborne, Dorset, who joined the Society in 1887. The deceased member had been in practice for over forty years, and was nearly eighty years of age at the time of his death.

A Forward Movement Mission Hall is in course of erection at Blaina, from plans by MESSRS. HABERSHON & FAWCKNER, architects, of Newport, Mon.

MR. J. WILLIAMS DUNFORD, Queen Victoria Street, E.C., is the architect of the Library in course of erection at Walthamstow through the munificence of Mr. Carnegie.

At Tattingstone, near Ipswich, a Water Tower is about to be erected and tanks provided at the Workhouse by the Samford Board of Guardians. MR. H. J. WRIGHT, of Museum Street, Ipswich, is the architect.

The main block of the Sanatorium at Allt-y-Mynydd has been completed. The building was erected from designs prepared by MR. E. V. COLLIER, architect, Carmarthen. Inclusive of furnishing the work has cost between £8,000 and £9,000.

A new Baptist Church is to be erected at Pendleton, at a cost of £4,000. Accommodation will be provided for 450 people. A feature of the building will be a couple of robing rooms behind the chancel, which can be thrown open into one for use as a lecture hall. MESSRS. COOK & SON, Manchester, have prepared the plans.

The name of Mr. G. E. BOND, Vice-President, has been added to the list of Justices of the Peace for the city of Rochester. Mr. Bond is well known and highly respected in the district, and, as an architect, he has added materially to the beauty of the town, many of the public buildings bearing testimony to the fact. In politics Mr. Bond is a Liberal, and Chairman of the Liberal Club.

A new Church has been opened by the Primitive Methodists of Ellesmere, at a cost of some £1,500. The Church is capable of accommodating 300, while the adjoining schoolroom will seat 250. A minister's vestry and a classroom have also been provided, together with a heating chamber below. The plans were selected in a competition, the successful architects being MESSRS. SHAYLER & RIDGE.

Messrs. LACEY & Upcher, of Norwich, have been appointed architects for reparation work at the Churches of South Repps and Burnham Ulph. The Church of St. James, South Repps, is mainly in the Decorated style, and has a handsome embattled tower. The new work consists of the reparation and strengthening of the tower, the re-roofing of the nave, restoration of the porch, etc., at a cost of about £800. The nave roof of All Saints' Church, Burnham Ulph, which was built as a Chapel to St. Mary's, Burnham Westgate, near the north coast, will be restored.

Annual General Meeting.

The Twenty-fourth Annual General Meeting of The Society of Architects will be held at Staple Inn Buildings (South), Holborn, W.C., on Thursday, October 15th, 1908, at 8 p.m.

Agenda :—

1. The Acting-President to take the chair.
2. Minutes of the last Ordinary Meeting.
3. Nominations for Membership.
4. Ballot for the following candidates.

For Honorary Membership :—

Atherley-Jones. L. A., K.C., M.P.,	Kimberscote, Bray, Berkshire.

For Membership :—

Boddy. Percy Charles,	80, Beverstone Rd., Thornton Heath, Surrey.
Campbell. William Garrett,	Johannesburg and Boksburg, Transvaal.
Corby. Percy Edmund,	15, All Saints Place, Stamford, Lincolnshire.
Dicks. Harold Edward,	Semington Cleeve Hill, Cheltenham.
Farrow. John Wilford Hilbert,	King-Williamstown, Cape Colony.
Gibb. John,	Johannesburg and Boksburg, Transvaal.
Haugham. Charles Frederick Vernon,	P.W. Department, Cape Town.
Pearson. Lawrence Lewis,	142, Norwood Road, West Norwood, S.E.
Rogers. Fergus Carstairs,	Kimberley, South Africa.
Simmons. Alfred,	Glenmore, 41, Allen Road, Wolverhampton.
Wilkins. Victor,	24, Finsbury Square, E.C.

For Studentship :—

Smith. Albert George,	10, Worcester Place, Oxford.
Stephens. Robert,	New Chief Court Buildings, Rangoon.
Waller. Arthur,	879, Bolton Road, Bradford.

5. Council's Annual Report.
6. Election of Officers and Council, 1908-9.
7. Votes of thanks.

Meetings and other Fixtures of the Society.

Session 1907-8.

Subject to such alterations and additions as may be announced from time to time in "The Journal" or by circular.

1908.

Sept. 3rd. Council Meeting. House list, 1908-9.
,, 21st. Entries for Membership Examination close.
,, 23rd. Entries for Correspondence Classes close.
,, 28th. Correspondence Classes commence.
Oct. 1st. Last day for submitting result of Travelling Studentship Tour.
,, 6th to 8th. Examination for membership, London and Manchester.
,, 15th. Twenty-fourth Annual General Meeting.

THE
Journal
OF
The Society of Architects
FOUNDED 1884. INCORPORATED 1893.
Including Transactions and Architectural Notes.

No. 12. Vol. I.] OCTOBER, 1908. [New Series.

The Society is not, as a body, responsible for the opinions expressed by individual authors and speakers.

Weaving Concrete Poles.

Concrete is used for many purposes nowadays, but a new development has taken place by the installation of a machine at the Works of the Cubitt Concrete Construction Company at 260, Gray's Inn Road, London, W.C., which automatically manufactures hollow tapering concrete poles or posts for conveying electricity either for telegraph, tramway or electric light purposes, as well as pipes for conveying water, gas, sewage, etc., under pressure. The concrete of which these are formed is strengthened with steel wires or rods of small size, by the aid of which poles as long as 40 ft. are made extremely light in weight (the thickness of the shell being 1 to 2 inches) yet as strong as iron poles. The method of manufacture is novel and interesting. A small conveyor belt under great pressure, wraps, in a spiral manner, a layer of concrete and a bandage of cloth round a metal core which has the wires or rods fastened to it. Thus rotating and gradually issuing from the machine the pole or pipe is immediately completed except for the withdrawal of the core and the removal of the bandage after the concrete has been allowed a short time in which to harden. The cost of these concrete poles is considerably less than iron or even wooden poles of long length, to both of which they are superior as regards appearance and durability, being in fact, practically everlasting, and requiring no painting. The pipes, manufactured in a similar manner, are made up to 20 ft. in length, and 2 ft. in diameter. They will withstand enormous pressure and take the place of iron pipes for water and gas mains, sewers, etc., over which they have the advantage of much greater durability and considerable economy.

An Overcrowded Profession.

Some Abuses and their Remedies.

What is the real cause of the distress which undoubtedly prevails at the present moment in the Architectural profession, and what is the remedy ?

The leaders in *The Builders' Journal* on this matter have attracted a good deal of attention, and in the main we are in agreement with the views put forward therein.

It is pointed out that while the various architectural schools are turning out numbers of well-trained men, these latter, from the very fact of their having been imbued with a sense of the dignity of their art and the rules of professional etiquette, are most likely to go under to men who possess a more materialistic equipment and temperament, and it is the former and not the latter who are at present feeling the effects of over production in the architectural schools.

The remedy is undoubtedly the one hinted at, and one which The Society of Architects has consistently aimed at for so many years, viz., the necessity, first of all for an adequate architectural training, and secondly, for the protection of the architect so qualified; in other words, compulsory education and registration.

It is obviously unfair that a man should spend some of the most important years of his life, and frequently also, large sums of money on his professional education and then be left to shift for himself in competition with others who have drifted into the profession, and who have not the same code of morals.

Then there is the pupil " farmer," and it is suggested that steps should be taken to regulate the proportion of paying pupils to paid assistants in architects' offices.

Mr. Albert C. Freeman (Member), in a recent letter to *The Evening News*, points out that there are at present some 2,000 architects practising in London, twenty per cent. of whom are making only a precarious living, and he deprecates the manufacture of architects in rate aided schools, characterising it as a waste of public money. Registration he says would stop this.

Again, a correspondent in *The Building News* is indignant at the conditions imposed in a competition for some schools, and expresses the opinion that the acceptance of them by architects of any standing will form a dangerous precedent. He sees no remedy but State registration, which would enable the governing body to effectually boycott such a competition.

Were there only one body representing the architectural profession, then it might with some chance of success intervene in this and other abuses, but, so long as the profession is divided on points of policy and split up into various architectural institutions, there can be no real control.

The fact that there are many able architects outside of any corporate body shows that from the point of view of the individual it is not necessary that, in order

to successfully carry on his practice, an architect should federate, and when any member of an architectural institution is expelled from that body it makes not the slightest difference to his prospects, inasmuch as the public set little or no store on qualifications conferred by membership in a voluntary institution.

A solicitor who is struck off the rolls practically loses his livelihood, but an architect, being under no such control, is free to continue his career even though he be an outcast from society.

It is possible that here is the secret of that apathy which prevails on questions affecting the federation of the profession? Does the architect prefer individual liberty and the present abuses of his profession to the wholesome restraint and consequent all round betterment which would be the gradual outcome of legislation?

The veto of an architectural institution on an objectional competition, does not prevent its members from participating, and if they do so, the only penalty possible under the circumstances is the notification of a mild expression of regret that they should have been so disloyal.

Not until we have a profession united under one authority, shall we be able to properly cope with abuses, or do anything to materially advance the interests of architecture.

In throwing open its columns and discussing in detail, from week to week, the many obstacles to the advancement of his art and to his own welfare which beset the architectural practitioner of to-day, the *Builders' Journal* is doing good service, and we would emphasize the following point raised by our contemporary. There is no doubt that the protracted period of commercial depression now being experienced in this country is slowly but surely causing many architects to realize the full significance of the unfortunate fact that, to a very considerable proportion of its members, the architectural profession, at its best rarely a lucrative one, is ceasing to afford the means of obtaining a modest livelihood. Public buildings of an architectural character, which formerly, as a matter of course, were designed by qualified architects, are now, more often than not, entrusted to public officials variously described as county or borough "architects," "engineers," and "surveyors."

Despite the immense amount of work thus regularly filched from the properly trained and experienced architect, the ranks of an already seriously overcrowded calling, are being constantly augmented by the steady influx of a large number of, in many cases, imperfectly educated and otherwise undesirable youths fresh from the so-called "Architectural Schools" or the builders' yard. Now the sole possibility of earning more than a bare living in architecture that will be open to many of these recruits lies in the adoption of methods of obtaining work which, we hope and believe, are very properly despised and ignored by the average practitioner. We allude to the system of directly advertising for work, touting for commissions, and working for less than the authorized scale of charges.

Probably no self-respecting architect will admit that men guilty of these malpractices, and acts of disloyalty to the general body, have any right to be regarded as members of his profession, but as, unfortunately, a certain section of the public thinks otherwise, and is therefore often quite content, and indeed eager, to secure the services of these tradesmen-architects, it is useless to attempt to ignore, or regard as though they were non-existent, some of the greatest hindrances to the success of the well-qualified and honourable practitioners of the day. Over and over again, attention has been drawn to the almost criminal folly of those parents and guardians who, probably attracted by the allurement of that egregious *deceptio visus*,—five per cent.,—persist in encouraging their sons and wards to become members of a profession in which, probably to a far greater extent than in any other calling, qualifications of a very diverse and manifold nature are essential to the attainment of even an ordinary amount of success. We unhesitatingly recommend all such fatuous advisers of the young aspirants to the architectural profession, to "read, mark, learn, and inwardly digest" the object lesson offered by the irrefutable evidence of the general poverty which is to be found among members of the artistic fraternity. Striking examples of the penury too often associated with an artistic profession are to be found in the records of the Architects' Benevolent Society.

Should not some reasonable limit be placed upon the number of students who propose to become members of the profession through the instrumentality of the schools of architecture which have been either more or less recently instituted, or are now in course of formation throughout the country? Could not the absurdly low standard of general knowledge at present required for the entrance examinations to many of these "seats of (architectural) light and learning" be raised to the permanent advantage of the profession and possibly, who knows, to the welfare of rejected candidates themselves?

Again, is it not little less than scandalous that members of the profession who have neither any work passing through their hands, nor any tangible prospect of obtaining employment in the near future, should nevertheless be permitted to entice an unlimited number of premium bearing pupils into their work-denuded offices?

The adoption of some protective measure, whereby the professional status of architects would be ensured, and their prospects of obtaining a livelihood rendered less uncertain, ought not to present insuperable difficulties to men who, otherwise, may soon find themselves engaged in a dire struggle for their very existence. But to ensure the success of any attempt to strengthen the position of architects by means of combination and consolidation, members of the profession must, perforce, set aside their internal jealousies, dissensions, and divergent views. No measure of reform can be carried unless *whole-hearted* and *loyal* support be accorded to a

policy based upon the fundamentally sound principle of securing, as far as possible the welfare of the greatest number of those whom it is intended to benefit.

The difficulty of coping with the dangers which surround the architectural profession is increased by the fact that obstacles to progress and reform lurk both within and without the fold. Within, in consequence of the weakness and vacillation of architects themselves (of which we have hitherto heard so little) and without, through the ignorance and apathy of the public (of which we have heard so much). Evidence of the internal weakness of the profession is easily produced; for, most assuredly, any other body of professional men, having due regard to its own interests, would *long* ago have succeeded in closing its ranks to all but the properly educated and trained practitioner—would have limited, as is the case in legal fraternity, the number of articled pupils allowed to each member of the profession—would have seen to it that architectural appointments to county, city, or borough councils, were made only from among men possessing the requisite artistic qualifications, and, further, would have *insisted* that the holders of these appointments should be compelled, as a condition of service, to limit their architectural output to such buildings as naturally fall within the sphere of their official duties.

It may well be that the effect of the troublous time through which the architectural profession is now passing will serve to bring home to a large number of its erstwhile somewhat apathetic members, the absolute necessity of adopting and that soon, some means of strengthening and controlling the profession, (1) to enable its membership to be kept within reasonable limits, (2) to prevent the disgraceful practice of "underselling" followed by certain architects, and to ensure, in the future, the retention, by the architectural profession of work which at present is allowed to be diverted into the hands of building surveyors, engineers, and tradesmen.

Burford.

By HAROLD F. TREW, Student.

STANDING on the slope of one of the valleys which afford protection from the winds as they sweep across " these high wild hills," one may look over the old grey roofs and gables of the main street of Burford as it runs down the hillside to the bridge which spans the Windrush below.

One's thoughts are taken back to the days of the Stuarts, and to earlier times when prosperity reigned here in the kingdom of the wool merchants, when the wages of the shepherd were high, and when English cloth stood foremost in the markets of the world.

But the history of Burford goes back much farther than this : on the hill near where we stand was fought the battle in which Cuthred, King of Wessex, gained in 752 the victory over Ethelred, King of Mercia, an event celebrated until the middle of the eighteenth century by a procession of the inhabitants on Mid-summer Eve through the town, carrying a representation of the Golden Dragon of Wessex with them : it is perhaps this Golden Dragon which survived as the leopard rampant in the arms of the town, or more remotely in the name of an old inn, " The Ramping Cat."

William the Conqueror is said to have visited Burford, and shortly afterwards a " Gild of Merchants " was founded here by a Charter given by Robert Fitz Hamon, and confirmed by Earl William of Gloucester.

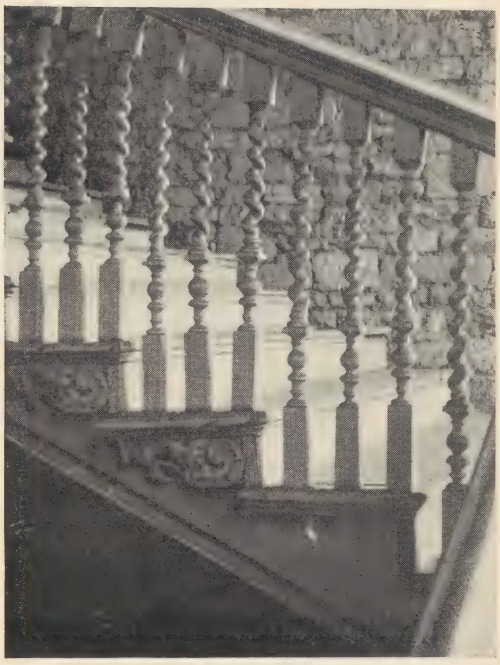
The oldest work in Burford is the Norman tower of the Church, which dates from about this time. Parts of the Church are Early English, but most of it Perpendicular, and it has a fine porch of this date.

Some parts of the grammar school are of the fourteenth century, while to the fifteenth belong the almshouses founded in 1457 by Henry Bisshoppe through a Charter of Warwick the Kingmaker to which is appended one of the only two autograph signatures of his which are known to exist, the other being at Belvoir.

The Priory was founded at least as early as 1291, and at the dissolution was given by Henry VIII. to Edward Harman, the King's barber. In the time of Elizabeth the present house was built by Sir Lawrence Tanfield, Baron of the Exchequer, from whom it passed to Viscount Falkland his son-in-law ; he in 1636 sold it to William Lenthall, who became Speaker of the Long Parliament, and retired here after a short exile to build the chapel and end his days.

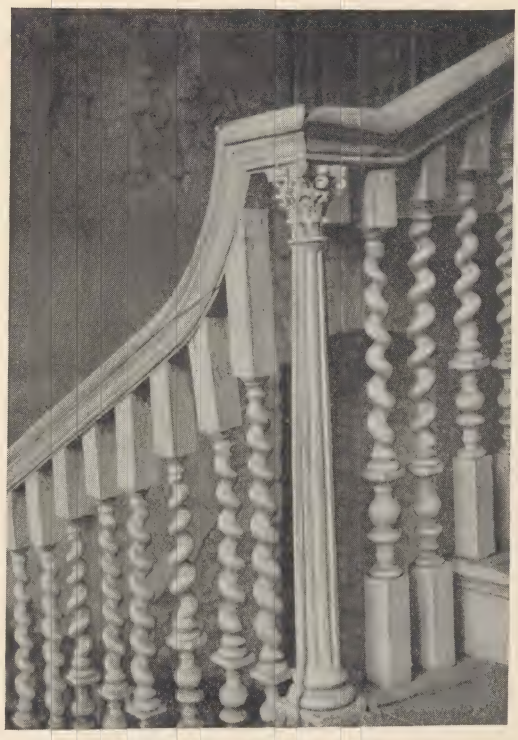
This chapel was the scene of Waller's picture " The Empty Saddle " ; it contains part of the family gallery, supported on twisted columns, and a curious carving of the burning bush. In the house is a fine staircase with spiral balusters, ceilings of moulded plaster, and carved stone mantlepieces, but much of the old building

Burford Church. The Porch and the Silvester Aisle.



Burford Priory. Details of Staircase.

Burford. Doorway of the Great House.



Burford Priory. Details of Staircase.

was pulled down and re-modelled early in the nineteenth century before it passed out of the hands of the Lenthalls in 1829, since when it has been allowed to fall into a ruined condition from which there is now some hope of rescue.

The first authenticated Royal visit to Burford was that of Queen Elizabeth, in 1574. Some years later the Queen wrote a letter "To our loving freinds the Baylyfs and other the Companye and Inhabitants of the towne of Burford," which forbade them to hunt during a time of plague in 1593 in the Royal Forest of Wychwode, as it was their privilege to do on "Whitsondaie"; the letter further ordered that the keepers of the forest should deliver two bucks over to the inhabitants for a feast, and stated that this should be no prejudice to their custom in the future. It does not seem however that the privilege was continued afterwards, but the venison was sent and a great banquet held in the Town Hall until 1854 when the forest was destroyed so that the land might be used for agricultural purposes.

James I. when on a visit to the town in 1603 was entertained at the Priory by Sir Lawrence Tanfield, whose magnificent tomb is in the South aisle of the church. When Charles I. came to Burford in 1644 on the return from his flight from Oxford, he refreshed his troops at William Lenthall's house, himself staying at "The George," no longer an inn, but which still stands much as it did in those days, with an archway leading from the street into the courtyard, and with the old panes still remaining in the windows, on one of which, scratched perhaps by the diamond ring of some Puritan in the time of Charles II, are these words:—"Teach me to hate the author of my wrongs for as yet I know not what it is to hate, My Soul engrossed by softer passions has not room to entertain so rough a thought, 1666." To which one Samuel Pepys, perhaps the diarist himself, one would certainly think him to be quite capable of the remark, has added—"then you ought to be dam'd, Samuel Pepys."

Perhaps the greatest event in the history of the town in these days was the capture of the Levellers in 1649. Dissatisfied with the Commonwealth as they had been with the Monarchy the mutineers rose at Salisbury under Colonel Scrope. Marching northward to the Thames they hoped to unite their forces with other discontented regiments. Unable to cross the river at Newbridge they swam over a few miles higher up and marched through Bampton-in-the-Bush to Burford, where, thinking themselves secure, they took up their quarters for the night.

But the news of the outbreak had reached Lord General Fairfax and Lieutenant General Cromwell; they had set out for Salisbury, but hearing at Andover of the northward movement of the mutineers, they crossed the Thames at Newbridge and reached Burford at midnight.

The rebels made but a brief resistance, many escaped, but about 400 were imprisoned in the church. Next morning after a Court Martial a cornet and two corporals were shot against the churchyard wall, while their companions learnt

the lesson from the roof of the Sylvester aisle. Cromwell then spoke to them from the pulpit in the church and told them that Fairfax had pardoned them all.

In the lead of the font may still be seen the words scratched by the point of a dagger, "Anthony Sedley, prisner, 1649," and in the churchwarden's books this entry: "Pd. to Daniell Muncke and others for cleansinge ye church when ye Levellers were taken, 3*s*. 6*d*."

Among the many fine buildings which the town contains, the Vicarage where Waller the painter lived must not be forgotten with its front dating from the time of Charles II.; nor the Great House, probably built in the reign of Queen Anne, and which contains a small chapel and a fine staircase, and has over its side doorway a beautiful shell hood.

But we must not linger, and taking a last look up the long street between the gables and hooded doorways of this old world town, we turn and pass on from this quiet valley towards the greater centres of activity, over the bridge beneath which the water flows towards the metropolis of the world.

The Royal Photographic Society's Exhibition.

The fifty-third annual exhibition of this society was held last month, at the New Gallery, Regent Street. As has been the case for many years, the West Room was devoted to pictorial work, and upwards of three hundred photographs by over one hundred and seventy workers were shown. Most of the well-known workers were represented, and the presence of a number of new names in the catalogue proved that photography as a means of expression is gaining new adherents.

The scientific and technical section was strong in natural history work, photo-micrography was well to the front, and the X-Rays reveal phenomena concealed from the eye. A series of photographs described graphically the work being done and the difficulties encountered and mastered in the construction of the Panama Canal in 1908. Lightning and other natural phenomena were recorded. Telephographic enlargements, in which the detail is rendered with an exactitude scarcely rivalled and certainly not exceeded previously, fill a large section of one wall.

A new feature in the Society's exhibition was a section devoted to a photographic portrait gallery of eminent men, which has been gathered together by the Society. It is intended to store and index these and others in such a way as to make them accessible to all who may have occasion to refer to them. The Society asks the assistance of all who may have such portraits, particularly photographs of persons long deceased, in their possession in making the collection complete.

The Twenty-fourth Congress of the Royal Sanitary Institute, Cardiff, July 13th—18th, 1908.

By Messrs. JAMES & MORGAN, F.F.R.I.B.A., Delegates.

THIS Congress was opened under very auspicious circumstances,—the week's deliberations producing results of a highly practical order.

The Lord Mayor and Lady Mayoress officially received the Members and Delegates in the City Hall, after which the company sat down to a luncheon. Later in the afternoon the Health Exhibition was formally opened by the Lord Mayor.

In the evening a Civic reception was given to about 700 visitors,—at a subsequent gathering in the City Hall, Mr. Searles Wood, Chairman of the Council, introduced the Earl of Plymouth, who delivered his inaugural address as President of the Congress. The address was very practical and dealt with matters appertaining to personal health, popular sanitation, fresh air for the home, building by-laws, care of children, hygiene in the school, etc.

During the remainder of the week, papers were read and discussed on the following amongst various subjects: "Construction and Management of Crematoria," "Methods of mixing and laying Tar Macadam for Street and Main Roads," "Tree planting in Streets," "Cardiff Corporation Waterworks," "Street and City Planning" (Mr. Raymond Unwin, M.S.A.), "Seamen's Hospital, Cardiff," "Notes on Small County Schools" (Mr. D. Pugh-Jones, M.S.A.), "The Ventilation of Schools" (Mr. R. G. Kirkby, M.S.A.).

The Section for Engineering and Architecture was presided over by Sir Henry Tanner, who in a short address referred to changes in building construction, and said the general desire nowadays, in regard to the majority of buildings for other than domestic purposes, was to provide structures to resist fire, and wood had to be abandoned as far as possible and steel introduced, and covered with some material which was a bad conductor of heat.

Portland cement concrete was being generally used for the purpose and this obviously added to the cost of such structures. The consequence had been that reinforced concrete, which, for the last ten years had been occupying the attention of many people, had almost suddenly burst upon the profession.

We were much behind other nations in this respect. Reinforced concrete construction was the best fire-resisting system at which we had yet arrived. Assuming that the steel was properly covered, severe fires showed that it suffered little damage, and confined fires within the enclosing area. There resulted a great saving of space owing to the thinness of the external walls, retaining walls, etc., and it was astonishing what pressures these latter could resist.

Doubt had been raised as to the stability of this form of construction, but he thought that these need not cause any anxiety to those who used it. It had been repeatedly shown that the steel did not oxidize when covered with concrete such as was used for the purpose, and that accidents, none of which had occurred in this country, had all been traced to causes which should not have existed.

Papers on engineering subjects were numerous and the discussions particularly interesting. There were very few architectural subjects in the week's programme and nothing of striking importance arising out of the papers read.

The afternoons were spent in pleasant excursions by rail, motor cars, brakes and pleasure steamers, visiting Cardiff and Barry Docks, Electric Power Station, Reservoirs, Cardiff, Caerphilly and Chepstow Castles, Roman remains at Caerwent, Tintern Abbey, Cardiff Infirmary, Sanitorium and Seamen's Hospital Buildings, Dowlais-Cardiff Steel Works, and such places as Minehead, Flat Holm Island, Ilfracombe, and evening cruises in the Bristol Channel.

On Wednesday, the members were most hospitably entertained by the Earl and Countess of Plymouth at a Garden Party at St. Fagan's Castle, where about 1,000 ladies and gentlemen enjoyed a pleasureable afternoon in the lovely grounds, listening to delightful music by the Royal Welsh Ladies' Choir, and the splendid Band of the South Midland Royal Engineers. The weather conditions were all that could be desired.

On Thursday evening, a successful social function was the Conversazione and reception given at the City Hall by Dr. and Mrs. James Robinson, Chairman of the Local Executive Committee. The guests to the number of over 700 were entertained with a charming musical programme and provided with refreshments.

Amongst the delegates at the Congress was Dr. Kajiura of the Japanese navy.

A Garden Party was given on Friday, at Liantarnam Abbey, on the invitation of Sir Clifford Cory, Bart., M.P., which most of the delegates availed themselves of, and spent a pleasant afternoon, travelling to and fro by special train.

The closing meeting of the Congress was held in the City Hall on Friday, when Mr. Searles Wood presided. Complimentary votes of thanks were passed to the Lord Mayor and Corporation for the cordial manner in which the Congress had been received, and for the hospitality extended to the visitors.

It was agreed that the Congress had proved to be one of the most successful ever held, and that the palatial buildings in which they had been accommodated had added materially to the comfort of the members and the progress of sanitary efforts.

The Progress of Fire Prevention in America.

This question has recently been dealt with in the columns of *The Inland Architect and News Record* where it is suggested that the splendid fire services available in the American cities militate against fire prevention efforts, on the principle that the more there is done for people in a certain direction, the less they will do for themselves.

Do away with these facilities for fire extinction, and property owners will tackle the fire problem from the other end, and make sure of fire prevention. The common delusion that insurance prevents fire loss is incorrect, as a little reflection will show. Fire insurance not only does not prevent loss, but in America it encourages fires by preventing the loss from falling where sometimes it ought to fall, on the more or less culpable owner.

Commenting upon this view of the matter a correspondent points to the disheartening fact that a City Council is usually ready to favourably consider some fire-fighting device, but will adjourn on a proposal to enact a more rigid building ordinance, or if it passes one, will make an exception for someone's proposed theatre, or somebody else's hotel fire-trap.

The fire losses of the world are about £150,000,000 per annum, of which America supplies over one-third with only one-twentieth of the population. New buildings and repairs barely replace in value the amount destroyed by fire annually, the margin in 1907 being only some £3,000,000 in favour of the former. Boston has had buildings to the value of £1,250,000 destroyed by fire within the last few months, while in Rome, a city of equal size, the fire losses do not reach £12,500 in a year.

In all Great Britain during 1907 the greatest fire damage did not reach £100,000 and the total aggregate did not exceed £1,000,000, but in America a city of any size is aggrieved if it has not at least one £250,000 fire in a year.

New York has 3,000 firemen, 11,000 horses and 160 steam fire engines, and yet suffers enormous fire damage every year. London has but 3,843 fires a year; Berlin, 3,000; Rome, 270; Milan, 786; Florence, 160, and so on down the list.

Not one European city equals, pro rata of population, one-fifth of the fire loss or cost of fire-fighting agencies that anyone of our American cities suffer; but then in Europe they have fire prevention and they have not the lumber that tempts America to do wrong.

In spite of all this, fire prevention has progressed in America. Over one hundred American cities have bettered their building ordinances; in some cities new combustible buildings are not allowed in certain districts; the insurance companies are encouraging fire-proof construction; architects are giving the matter attention and do fewer foolish things in building and even the layman is beginning to see

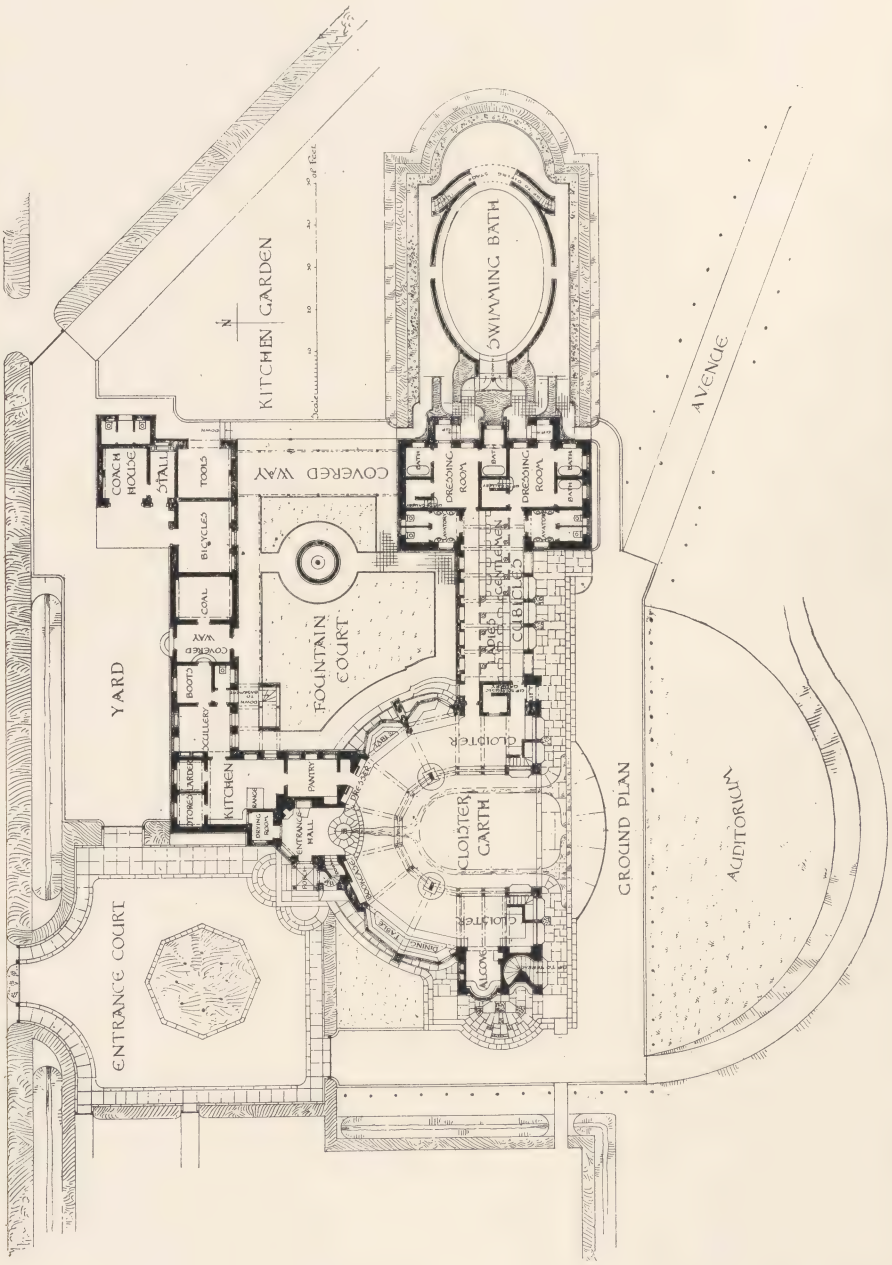
that in better construction is there ultimate economy and profit. These are hopeful signs. True there are yet something like 12,000,000 buildings, fire-traps, to be removed or burned down, old and poorly built affairs, but constituting a future ash-heap that it has cost over £3,500,000,000 to produce.

The suggestion is made that cities should enact a regulation compelling the building departments to conspicuously label all buildings in the congested district and all others anywhere of a public nature, as to what classes they belong, "fire-proof," "ordinary" and "dangerous," and then making it a serious offence for an owner to advertise his building of a superior class than that to which it really belongs. That would help clear out a lot of old shacks that now parade under false colors, and would certainly act as a deterrent to the addition of new fire-traps. A man would think twice before starting on a new building that he knew would be marked "dangerous." That word would keep out tenants he might otherwise have blandished into occupancy of his shoddy building.

The Yockney & Hartham Park Stone Co., Ltd.

The Bath Stone businesses carried on for over thirty years by Yockney & Co., and for the past eighteen years by The Corsham Quarrying Co., with the recently acquired Hartham Park Quarry of Kinneir & Lucas, have been taken over by, and will in future be carried on as an Amalgamated Company under the style and title of, The Yockney & Hartham Park Stone Co., Ltd. This firm is now in possession of extensive areas of Bath Stone Mineral which places them in a position to supply from its own quarries the various descriptions of Bath Stone of the best quality. Members who took part in the visit to Bath last year will remember visiting these quarries.

The Cloisters, Letchworth.



PLAN

(By kind permission of "The Architectural Review.")

The Cloisters, Letchworth.

A School of Psychology.

WHEN The Society of Architects paid a visit to Letchworth just a year ago, the members were able by the kindness of Miss Lawrence, to inspect the open-air school which she was then building at a cost of something like £25,000 from the designs of Mr. Cowlishaw.

At that time the building was unfinished and there was some difficulty in getting illustrations, but now, through the courtesy of *The Architectural Review*, we are able to give some excellent views and further details of this interesting building reproduced from an article published in the March issue of that paper.

This building was erected between November, 1905, and November, 1907, by Miss A. J. Lawrence, and has an essential mission bearing on the evolution of the human race.

A School of Psychology is to be founded there, which will have for its principal object the study of "how thought affects action and what causes and produces thought." An endeavour will be made to focus the results of the various branches of science and art developed during the preceding century and intimately connected with humanity, and which up to the present time have been and are being studied without relation to one another, and therefore have a less powerful influence for good than if united with a common purpose.

The accommodation offered at the Cloisters is for twenty residential students, young men and women, and the building has also been designed so that conferences, lectures, musical and dramatic performances, etc., all in conjunction with and for the furtherance of the leading idea, may be held without necessarily interfering with the students in residence—all of whom would probably take a leading part in the public meetings. It is intended that the students shall form the nucleus of an altruistic crusade against the low spiritual and corresponding economic state of society.

The building has been carried out within the established professional cincture; that is to say, drawings, etc., were made as complete as possible consistent with a fluid idealism, and an estimate was obtained from Vare Bros., who took out their own quantities, and this estimate was accepted, subject to some omissions.

On account of the constant influx of fresh ideas and suggestions great latitude was allowed, so that they might be incorporated in the building as it proceeded. This incorporation could of course only be in any way satisfactorily accomplished by the close personal attention of the architect on the building.

With the acceptance of a fair price for the main body of the work, which could be shown by drawings, etc., and with sufficient financial latitude to carry out fresh

inspirations, and the ensuring fair wage to all concerned, it was possible to encourage and bring out latent craft traditions, which it would seem lie dormant in the majority of the workmen employed on modern buildings.

Into the fundaments of the structure many suggestions of natural symbolism have been woven ; for instance, the Swedish green marble columns in pairs round the cloister garth were specially selected by Whitehead & Sons, Ltd., and cut so as to show the veining running vertically to give a strong idea of upward growth and aspiration. The green colouring of these columns is carried up in the form of mosaic into the arches, and is to have a high polish after the manner of holly leaves.

A change in the marble is made for the two open fireplaces to red Ipplepen, which is again carried up in red marble mosaic into the arches, where it intermingles with the green, the idea being that the fires have changed the green to red marble. Above the arches starting at the campanile staircase, and running round the cloister garth and over the arches to the cubicle wing, and finishing at the dressing-room block, is a creamy, pink-coloured Suffolk rubbed and gauged brick frieze, 7 ft. high from the crown of the arches, which is intended, together with the stone springer above the columns, to be sculptured in bold low relief with a subject such as the ascent of mankind from the past into the future.

On January 28th, 1907, the building was dedicated by Miss Lawrence, and the inscription written and illuminated on vellum by the architect was enclosed in a glass casket, and placed in a cavity in the springer stone over the fountain in the entrance hall, and sealed with a small stone cap.

From beneath the dedication stone flow crystal streams of water in symbolism of the purest and fundamental motives for erecting the building. This water falls into the upper basin of the fountain, and runs away at the foot in an emblematical way across the cloister, after which it divides and flows in two streams over the cloister garth. At present pavonazzo marble has been laid from the fountain across the cloister, and will be continued at a later date around the cloister garth in a field of marble mosaic patterned with meadow flowers.

The lower basin to the fountain is a " lavabo " with eight small basins with hot and cold water supplies for the hand-washing of guests. The small hooks above the basin are for mirrors, and those above the upper basin are for cups.

The four contrivances fixed upon the lower basin are in bronzed gun-metal, and contain soap powder, which can be extracted by moving the small wheels at the side.

Embroidered towels will be hung near the fountain on the walls. All the metal-work exposed to view is in bronzed gun-metal, and the marble in Swedish green cut in a similar manner to the columns to show the veining vertically. Bolding & Sons, Ltd., executed the plumbing, and Whitehead & Sons, Ltd., the marble for the fountain, etc.

(By kind permission of "The Architectural Review.")

THE ENTRANCE HALL FROM THE CLOISTER GARTH.

(By kind permission of "The Architectural Review.")

ENTRANCE PORCH AND TOWER.

The campanile staircase leading to the upper terrace, in which a bell will probably be hung, is executed in Purbeck stone, Swedish green marble shafts, teak handrails, and deal painted balustrades. Burt & Burt, of Swanage, are responsible for the Purbeck stonework, and the many unfinished details in the stonework of this staircase are left for carving already begun by the architect.

The headers of the bricks of the inner walls are intended to be carved with representations of leaves which are supposed to be whirling down this stairway under the influence of the winds, and it may therefore be described as a staircase of the winds and leaves.

The foundations of the building, and the basement walls, are built almost entirely of blue lias lime concrete, the lime being from Barrow-on-Soar, and the whole is encased on the outside up to the dampcourse near the ground level with Limmer asphalt. The ordinary bricks are mostly Fletton or Arlesey bricks. The facing bricks are hand-made creamy pink bricks from Suffolk. All the stone is Purbeck stone quarried near Swanage, Dorset, and chosen on account of the variety of tints it shows; some of it is tooled, and other parts rubbed according to the situation.

The creamy pink tiles used for the jambs, mullions, and transoms of the bay windows, and used in the arches, and in many other places and situations about the building, are made from the same clay as the bricks, and come from Suffolk. The red tiles used on the roofs and elsewhere about the building also come from Suffolk.

All the flints used in the diaper work around the building were picked out of the local gravel, and have been used in the natural state, or knapped, as the case may be. The result, especially after a shower with the sun shining on them, is as though the brickwork were studded with jewels.

The red 9 in. by 9 in. tiles in various parts of the building were supplied by J. C. Edwards, of Ruabon, and he also supplied the buff tiles for the paving of the swimming-bath.

A considerable number of plain block stones are left for sculpture and carving in different parts of the building, *i.e.*, those at the top of the tower on the parapet and apex, and the large stone gargoyle.

An eagle is supposed to be cut on the top of the gargoyle, and groups of birds to be brought out of the other stones. There is also a block forming the corner of the entrance-porch steps that may be either carved or serve as a pedestal for a statue.

Special note should be taken of the cast leadwork forming rainwater heads, pipes, and gutters, and apron to the tower finial. The models for this work were designed and executed by the architect with the assistance of George Adams, and the casting was done by Mr. A. Nickels and his son upon the premises.

Swallows are represented flying round the stone finial at the apex of the tower. On the western side are three heads, etc.; the one nearest the entrance porch has three bats hanging from roofs just about to start on their evening flight, and it will be seen that Sirius is shining brightly in the sky. Moths are represented on the bands to the pipes. The two heads on the western alcove show the sun setting and three bats in each in full flight, with moths also shown on the pipe bands. These heads have been painted in natural colours and the stars gilded by the architect.

Just inside the cloister garth are four heads representing honey in the honeycomb as food for the gods, and the long gutters show birds flying off and on, and two doves typifying guilelessness. The pipe bands have a single bee shown on each, and the whole will eventually be painted.

There are three heads on the south front, which are intended to intensify the sensation of heat, and represent the noonday sun in high heaven, with butterflies dancing in the empyrean. On the pipe bands are shown mice enjoying a feast upon the well-ripened wheat. Some of these heads have been already painted by the architect.

In the fountain court is a double head typifying the peace of the homestead. Swallows are shown darting round in circles, as is their delight in calm and peaceful surroundings.

The remainder of the rainwater heads, etc., are in iron, and will, it is hoped, in course of time be exchanged for others in cast lead.

The interior walls and ceilings are left at present as plain brickwork, etc., and colourwashed with Hall's Washable Distemper. Eventually these walls, etc., may be covered with tiles, paintings, or mosaics. The idea of hosing down the building with water from top to bottom can, however, be at the present time carried out to ensure the greatest hygienic conditions.

Independently of the ordinary fireplace in the cloisters, a heating apparatus has been installed by Mackenzie & Moncur, Ltd., who also executed the hot-water supply. As the building is to all intents and purposes an open one, the problem of generating sufficient heat in the winter months, so that meetings can be held with a reasonable amount of the usual comfort, has been a difficult one.

With the canvas curtains in the arches drawn, and the awning over the cloister garth set up, with the fires and the present heating apparatus working at full power, a fair amount of warmth pervades the building, even on the worst days of the winter.

Owing to the difficulties of screening the wind, it is felt, however, that additional heating power will probably have to be provided to combat the worst conditions. The result of this scheme is that instead of breathing a hot vitiated atmosphere that is the almost universal adjunct in our public buildings, a sufficiently warm and completely fresh atmosphere is the natural environment at the Cloisters.

(By kind permission of "The Architectural Review.")

KITCHEN ENTRANCE FROM THE FOUNTAIN COURT.

(By kind permission of "The Architectural Review.")

THE LEFT CLOISTER SHOWING DINING TABLE AND BOOKCASE.

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OF
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The students when they are in residence will sleep on flat frame hammocks slung from the vaulting around the cloisters. By means of the exterior curtains and divisional curtains complete privacy is ensured. The ladies would occupy the right-hand side and the gentlemen the left, with night lavatory accommodation in connection with each side.

The cubicle accommodation is for dressing purposes only; one cubicle would be shared by two students. In the morning the hammocks and bedding would be drawn up to the vaulting to air, and when the weather is suitable a part of the cloister roof may be opened to allow the sun to stream into the building.

After a plunge in the swimming-bath, at arranged times, breakfast would be prepared by the students in the communal pantry, and any other domestic work accomplished.

Dinner would be served at a settled time from the kitchen, at which all the students would be expected to appear, and this would be the only regulated meal in the day. Tea or supper would be prepared by the students according to their own convenience.

The time between meals would be spent in study, the nature of which has already been mentioned and facilities for complete seclusion or partial seclusion are to be provided either in the galleries or probably in independent shelters in the grounds.

Above the entrance hall and pantry has been installed a very fine four-manual electric organ, with the console, designed by the architect, in a recess in the hall, and the whole built by Ingram & Co., Ltd., of Hereford. The sound issues from the organ chamber through the gun-metal louvres above the fountain. At present the main organ only has been built. Eventually it is hoped that the solo and echo organs will be built to complete the instrument. A small chamber has been provided over the south-west of the cloister for the echo organ, and one over the music gallery at the south-east end of the cloister for the solo organ. It is said that the shape of the building gives unusually fine acoustic qualities, and it is believed that the combination of the three portions of the organ in these positions will give some very beautiful effects. The shape of the building also throws sound well forward, so that an audience seated in the open auditorium in front of the building will probably be able to hear the slightest sounds quite distinctly.

At the entrance to the swimming-bath is a small fountain, which it is intended shall always throw a small jet of water into the bath so as to keep it fresh, in a like manner to a spring in a natural pond. The overflow will find its way round the grounds, and will be utilized for watering purposes. By this means it is expected that the bath will also need to be cleaned out less frequently.

With regard to the artificial lighting of the building, it has been prepared for electric lighting, and also heating in a minor degree, as soon as the current is available from the Garden City Company's station. In the meantime gas and oil lamps are being used as occasion requires.

The glazing of the three upper tiers of casements in the eastern and western bays, the circular casements in the south-west alcove, and the south windows in the cloisters is only temporary. In course of time it is hoped that this glass will be replaced with stained glass with a scheme portraying the rising and setting of the sun. Most of the casements are divided into small squares to take Powell & Sons' "Venetian glass," which is used for obscuration.

Throughout the building an effort has been made to use labour-saving devices; for example, Bolding & Sons, Ltd., have supplied lavatory basins and baths with the least amount of metal exposed in the fittings, and that not needing polishing.

Corticene is now being laid down for the finished surface of the floors of the cloisters, cubicles, dressing-rooms, etc., by a special process to give a silent tread and a sense of warmth, and to facilitate the hosing-down system of cleaning.

The ornamental plaster-work to the gables on the east side of the tower was executed in blue lias lime plaster by the architect *in situ*.

On the upper terrace above the organ chamber is a loggia, from which sheltered situation a magnificent view of the surrounding country may be obtained.

Meetings and other Fixtures of the Society.

Session 1907-8.

Subject to such alterations and additions as may be announced from time to time in "The Journal" or by circular.

1908.

Oct. 1st. Last day for submitting result of Travelling Studentship Tour.
„ 6th to 8th. Examination for membership, London and Manchester.
„ 15th. Twenty-fourth Annual General Meeting.

Architects and Unfair Competition.

The Louisville Chapter of the American Institute of Architects has taken action towards stopping a very pernicious practice there among the building contractors, of making drawings in competition with architects. A meeting of the Louisville Builders' Exchange was addressed by Messrs. McDonald, Erhardt and Maury, who stated the grievances of the architects and demanded that the practice be stopped. The architects' demands were received in good spirit and it is confidently believed that the practice of architecture by the builders will be stopped. They are pretty well entrenched but the architects propose building a fence around their backyard to keep out those that persist.

The Design of Small Columbaria.

Mr. Albert C. Freeman (Member), in an article appearing in *The Stone Trades Journal*, says, the solving of the problem has rested in the hands of the American architects, for in that country we find the most examples.

The principal columbaria to be found in England are those of Golder's Green, London, the crypt of the Liverpool Crematorium, and the Urn Grotto in the Hedon Road Cemetery at Hull.

The Golder's Green Columbarium, which is the property of the Cremation Society of England, is a tower-like building, having four storeys with provision for the reception of some 1,700 urns. The niches are formed of patent stone and arranged to hold one or more urns in a single compartment. The front of each niche is closed with a marble or glass tablet, or with iron and copper grids. Some of the latter are of a most beautiful design. The urn in general use is what is known as the "Box" shape. It measures 16 in. by 8 in. and is 6 in. high.

There are no small columbaria of any particular architectural beauty in this country, so we will, therefore, turn our attention to those which have been erected in the United States of America.

That there are great possibilities open to architects, sculptors and designers is well illustrated by the Wise Columbarium, which stands in the Baltimore Cemetery, Baltimore, Md., U.S.A. This memorial was designed by Mr. Ernest Wise Keyser, the New York sculptor. It is constructed of Barre granite and in size is 7 ft. 10 in. by 6 ft. 4 in. and 10 ft. 4 in. high.

The exterior is composed of ten blocks—the heaviest of which weighs five tons, the total weight being twenty tons. This columbarium rests upon a concrete foundation 7 ft. deep.

The interior is lined with polished Italian marble, and against the rear wall are built the marble niches of which there are twenty—in which are to be deposited and sealed the urns containing the ashes.

Another private columbarium, that in Mount Auburn Cemetery, Cambridge, U.S.A.—the Bowditch—is unquestionably one of the finest examples to be found. This columbarium, which was designed by Messrs. Putnam & Cox, architects, is 9 ft. high and cylindrical in shape. The circular granite base is 14 ft. in diameter. On it rests another base 10 ft. in diameter. The cornice and frieze are supported by four plain pilasters and their ornamental capital.

The interior is divided by a marble slab into two compartments, each fitted with five marble shelves, spacious enough to hold cinerary urns.

The Fries Monument, which stands in St. Anthony's Cemetery, Milan, Ohio, is a striking contrast to the simple dignity of the Wise Columbarium. Here we see a

profusion of exterior ornaments with details in several styles of classic architecture ; fluted Corinthian columns with entablatures bearing carved urns and Ionic columns supporting the pediment of the doorway.

This building, which measures 16 ft. by 30 ft. and is 33 ft. high to the top of the cross surmounting the dome, is constructed of sand-rubbed Bedford stone. There are sixteen ornamental windows in the dome, the ceiling showing in scriptural design in mosaic glass, "The Resurrection." The inside walls are of brown enamelled bricks set in circular design, and the floor is of marble mosaic with a monogram in the centre and a Grecian border. The doors and window frames are of bronze. The total cost of this monument was about £3,800.

The Tanner memorial, Springfield, Ill., U.S.A., illustrates another style which is interesting for comparison and study. This monument, which was erected in memory of the late Governor Tanner, was designed by the Tiffany Studios, of New York. It is in the Egyptian style of architecture, and is executed in rough-hewn granite throughout. Every detail appears to contribute to the general massive effect in such a way as to give it a distinct harmony of style.

The building is 36 ft. long by 25 ft. wide and is 25 ft. high. The dome is supported by rustic columns, 2 ft. 9 in. diameter by 9 ft. high, detached from the structure and extending all round it. The interior is also of rustic finish with bronze panels set in the walls ; and a niche formed for the bust of Governor Tanner. The floor is of polished granite in mosaic form and contains a polished tablet with inscriptions.

In visiting the American cemeteries one cannot help noticing the contrast between the design of their monuments and those of this country. The commonplaceness that marks so much monumental work is, of course, more easily repudiated in words than avoid in practice.

In designing a columbarium, we should remember the words of the Bard of the Night :—

> "Nothing but what is solid and refined
> Should dare ask public audience of mankind."

Let us, therefore, endeavour to effect a change of style, one that is imposing and suggestive of its meaning, one fitting to mark the point of transition from the earlier to the later custom of disposal of the dead.

The Organ Architecturally Considered.*

CONTINUING his article on this subject in *The Inland Architect and News Record*, Mr. George Ashdown Audsley, LL.D., architect, says that having, in a very brief manner, touched upon the more important matters connected with the position and accommodation of the organ in churches, it is desirable that a few words be now said respecting the most convenient position of the claviers or console, and, accordingly, the position of the organist with respect to the choir. Custom, ruled to a great extent by the question of cost, and also by matters of mechanical construction, has favoured, in the large majority of instances, the attaching of the claviers directly to the front of the organ. In the first place, this position compels the organist to sit so close to the organ that he cannot possibly hear properly the tonal effects he is producing, and, in the second place, it compels him to turn his back to his choir. This close and direct position of the claviers has, accordingly, nothing to recommend it from an artistic point of view, and still less from a musical one.

An able writer on this question, and an architect—one of the very few in the profession who has considered the organ worthy of serious consideration—makes the following propositions, in alluding to "the ideal position for the organist":

"1. That he should hear his choir well.
"2. That he should hear his organ well.
"3. That he should be able to see the choir well, and also see the clergy who may be serving at the altar.
"4. That he may hear the congregation at least fairly well.
"5. That he shall have a tolerable sight of the nave of the church, and thus be able to keep his eye on processions or other functions taking place therein."

The writer adds: "Where all these combinations are to be found I do not know. In a parish church (Protestant Espiscopal) of good size they would be difficult of accomplishment. They are not often approached in a church of the first magnitude."

While it is only in connection with certain churches—notably Roman Catholic and Protestant Episcopal (High)—that all the above conditions call for careful consideration, there can be no question in connection with churches of every denomination respecting the desirability, if not the absolute necessity of so placing the console, containing the manual and pedal claviers, etc., that the organist seated thereat can hear the organ properly, and both hear and see his choir well, and, in turn, be seen by it. The church architect should, therefore, in planning

* See page 261, No. 7, *ante*.

accommodation for a choir, be careful to provide a favourable position for the console both with respect to the organ and the seats of the singers.

As we have said elsewhere, it is impossible to give a rule of universal application for the position of the console and organist, simply because the size, form, and internal arrangement, of churches vary greatly; but the conditions just given will serve as guides, and are deserving of very careful consideration by church architects and musical authorities, in the planning of new churches or the rearrangement of those already built.

Although, in the preceding articles, allusion has been made to the organ in the concert-room, it is, perhaps, desirable, before leaving all matters connected with the proper placing of the "King of Instruments" in buildings, to add a few words respecting its position and accommodation in concert-rooms or music halls. The time is fast approaching, we feel assured, when the importance of public concert-rooms, furnished with a grand organ, will be widely recognized in this country, just as it has long been in England, notably by the corporations of the principal cities and towns.

It is of the greatest importance that in designing a concert-room the architect should give great attention to the requirements of the organ which is to be placed therein, and if he is not qualified to decide all details himself, all matters of size and disposition of parts should be discussed with the prospective organ builder, before the concert-room is proceeded with. We have seen, with respect to the church organ, that there are several conditions which attend the satisfactory placing of an organ in a church, and conditions of a similar nature obtain in connection with the correct location of an organ in a concert-room. There is certainly less diversity of opinion anent the proper position for the concert-room organ; and less difficulty, under ordinary circumstances, of properly providing for its accommodation, accordingly there is little or no excuse for the architect when he fails to make adequate provision for its reception. Great blunders have been made by architects in the past; and unless they take more interest in the organ and its proper accommodation than they appear to do at present, more mistakes will be made in the future. We unhesitatingly say that nothing in the form of a confined chamber should ever be constructed for a concert-room organ, on any sound-producing part thereof. As the instrument is required for solo performances or recitals, and alone, or in conjunction with the orchestra, for the accompaniment of the more important choral works, its voice, throughout all its departments, should be perfectly free and unobstructed, and every tonal effect and refined *nuance* it is capable of producing should be heard with distinctness and at its true value.

The proper position for the organ is above and in the rear of the orchestra tiers and chorus seats, but there it should not be unduly elevated, so as to place any of the more delicate portions of its pipe-work in the higher stratum of super-heated

air. The correct method is to keep all the manual divisions of the instrument on one level, and that as low as practicable under controlling circumstances, and to spread the instrument laterally, with the view of giving all divisions a minimum depth, and placing no one behind another. Beyond the external screen or case-work, with its mounted or displayed pipes, the several divisions should have no obstruction to the free flow of the sound in front of them. Under no conditions should the organ be divided, so as to locate its different tonal divisions on the left and right of the orchestra. The effect produced by a divided organ is most objectionable in solo music, and most disturbing when used with the orchestra and chorus.

In connection with a properly planned concert-room there will be no difficulty in providing a convenient place for the wind-collecting and distributing portions of the organ.

In providing for the reception of the organ, the architect must construct an absolutely rigid and strong floor on which the instrument can be safely erected. The flooring boards should be not less than two inches thick, securely spiked to the joists. It must not be forgotten that a large organ weighs many tons.

Finally, with respect to the position of the console, it is obviously desirable that it should be located at a distance from the organ ; and when the organ is used with the orchestra the console should be as close as possible to, and in full view of the conductor. This is now a simple matter, as the console can be made movable, and connected with the organ by the usual electric cable.

Not only is it desirable, and indeed necessary that the architect should become acquainted with essential matters connected with the construction of the organ to enable him to provide for the proper placing and accommodation of the instrument in his churches and other buildings, but also to give him confidence and freedom in the designing of the external case-work. The extreme poverty of design in this latter direction, in a large proportion of organ-cases—if cases they can be called —in the churches of this country, is surely a reflection on the taste and skill of the architects of America. It must be said, however, that in a great number of instances the architect has neglected his opportunity, and left the organ entirely to the tender mercies of the organ builder. Too often case-work of an artistic character is entirely dispensed with, and the abortion is produced which consists of a piece of flat-framed and panelled work, surmounted by a row of sham pipes, vulgarly painted, and innocent of any apparent support. Nothing more absolutely a negation of artistic propriety could well be conceived, yet architects, in their neglect of the organ, allow such objectionable things to mar their buildings, apparently without protest. We speak plainly, for the time has come for plain speaking in matters of art, and organ art in particular.

As we have said in part elsewhere, different opinions obtain among those who have given the subject of the organ-case consideration : some advocating a close-fitting and properly-ornamented case, extending to as great a height as the nature and locality of the instrument will permit ; and others maintaining that little if any case-work should be introduced above the level of the Great Organ wind-chest ; only standards with more or less ornamental staybars or pipe-rails of wood or iron being placed where necessary to support (or appear to support) the displayed pipe-work. There is much to be said in favour of the former treatment, which may be called the architect's method, and which is amply supported by the early practice in all the organ-building countries. It imparts great dignity and beauty to the exterior of the organ—correct design being understood—and protects its interior to a considerable extent from dust and extreme and sudden atmospheric changes. All the great organs, old and modern, in Europe are cased in this manner ; notably those in St. Bavon's Haarlem ; the Aegidien-Kirche, Lübeck, the Church of St. John, Bois le Duc, the church at Stralsund ; the cathedrals of Seville and Tarragona, Westminster Abbey, in all the large churches and cathedrals in France and in the concert-rooms in England.

The latter treatment above alluded to may, on the other hand, be designated the modern organ builder's style. It is much less expensive, and demands consummate designing (which it too rarely gets) before even a seemly result can be attained. In this treatment nothing is carried above the displayed pipes, which stand completely exposed. The only position in which such a treatment can be pardoned is when the organ front is confined within an arched opening of moderate height, but even there, some attempt should be made to relieve the dead monotony of the pipe-work. If the front can be advanced a short distance from the opening, there can be no difficulty in treating the case in a truly artistic and seemly manner, and that without any serious expense.

When the organ is to stand in an open space, as on an end gallery, it is desirable to protect its internal mechanism and pipe-work to as great an extent as practicable by case-work throughout its entire height, and it unquestionably gains much in appearance by this treatment, providing that the visible portion of the case-work is artistically disposed in conjunction with the displayed pipes, and otherwise tastefully and correctly designed. It is obvious that when the organ occupies a more or less confined place, such as a chamber or deep recess, less case-work is required, and the architect, in designing the screen or front, must be careful to provide ample openings for the free egress of sound. Standards bearing between them graceful tracery-work or carved pipe-shades (so commonly found in old organ-cases) and inclosing symmetrical arrangements of slender pipes, will always meet the conditions and produce a satisfactory design. In such a design, the introduction of flats of large pipes should be studiously avoided. These usually characterize organ

builders' essays in case designing. Large pipes should in all instances be sparingly used, and then only in towers and other salient features.

It is much to be regretted that so few old Gothic cases have been preserved to our day, for, judging by the other specimens of mediaeval woodwork that have been spared, they would have furnished valuable suggestions to the ecclesiastical architect and designer of church organs. The few mediaeval cases which have survived the ruthless hands of the religious fanatic and natural decay are so full of valuable teaching that one cannot help devoutly wishing that more had been spared for our edification. The organ-cases of the Renaissance, many fine examples of which remain on the Continent of Europe, furnish, notwithstanding their many meretricious and undesirable features, some valuable suggestions to the designer of to-day, and should be carefully studied by him.

The Quantity System in New South Wales.

After Conference between The Institute of Architects of New South Wales and The Master Builders' Association of New South Wales, it has been agreed that the principle of instituting the Quantity System be approved, and that quantities be provided for all works exceeding £2,000 in value, but be optional for works of less value.

Instead of making the quantities a portion of the contract, the selected tenderer should verify the quantities and accept the responsibility in the form of a lump sum contract, but the priced bill of quantities should, after perusal by the architect, in all cases be kept sealed in the confidential custody of the architect, to be opened only and re-sealed in the presence of the contractor, and that the prices therein should constitute schedule rates for all extras and deductions.

A certain number of qualified Quantity Surveyors are to be mutually recognized by The Institute of Architects and The Master Builders' Association, with power to add to the list as necessity arises, and such Quantity Surveyors shall sign a code of rules approved by the Institute and the Association.

The Quantity Surveyors' fees, the rate being one per cent. (1%) on the contract amount, are to be embodied as a portion of the tender and contract amount.

Fees are paid by the contractor out of the amount of the first certificate and are included therewith.

A Quantity Surveyor is not to practice as an Architect, Draughtsman, or Clerk of Works, or to carry on business as a Builder or Contractor, or Builder's Assistant, and will not be entitled to any claim for fees unless a tender is accepted.

If, when tenders are received, amendments are found necessary, the Quantity Surveyor is to prepare amended Quantities, and is to be entitled to payment at the rate of one per cent. (1%) on the amount of the accepted tender only.

International Competitions.

In accordance with the resolutions and recommendation of the Eighth International Congress of Architects, held in London in 1906, a special commission of seven members was appointed to consider the matter, and to report thereon to the next Congress (Vienna, 1908). After repeated meetings and discussions, the special commission has condensed the matter into the following twelve resolutions :—

1. International Competitions should be reserved for exceptional occasions of a really international character.

2. International Competitions may be either open to all architects without invitation or limited and by invitation.

Limited and invited competitions may consist of a single stage.

Competitions open to all should be held preferably in two stages.

3. The " conditions " of International Competitions are to be identical for all competitors.

No drawing or document submitted should be taken into consideration except those specified in the conditions.

4. The instructions to competitors should state definitely the conditions of the competition, and matters considered desirable should not be left to the option of competitors.

5. In limited and invited competitions, the conditions should be fully detailed, and should require the scheme to be fully developed.

In competitions open to all, the conditions should express the technical requirements in general terms, and limit the number and scale of the drawings to the minimum necessary for the jury to understand the design.

The conditions should require designs to be submitted anonymously under motto in the first stage, and to be signed by the author in the second stage.

6. In double competitions the conditions in the first stage should be as those for competitions open to all, and in the second stage as those for limited and invited competitions.

Designs selected in the first stage only can be admitted to the second stage.

7. The conditions of a competition should be published and placed at the disposal of competitors on the same date in all countries.

The date of despatch (evidenced by the carrier's receipt, which must be sent on to the jury) is to be the date of closing the competition.

8. The conditions must be drawn up in one only of the four languages officially admitted at the International Congresses of Architects of 1906 (London) and 1908 (Vienna) : English, French, German, or Italian.

The conditions should be prepared in consultation with experienced architects.

9. The jury of an International Competition shall consist of seven architects, all of different nationality, one of whom shall belong to the country which institutes the competition. A legal authority, nominated by the administration promoting the competition, shall preside in order to insure regular procedure, but shall have no vote.

The members of the jury, by accepting nomination, shall be held to have declared themselves to have no material interest, either directly or indirectly, in the execution of the work the subject of the competition.

10. It is desirable in International Competitions, and especially in the preliminary stages, that the exact limit of cost shall not be fixed, in order to leave full liberty to the artistic conception of competitors.

11. The total value of the premiums to be awarded shall be at least double that of the fees payable upon the execution of the work if it had been entrusted to an architect without competition.

The principle must be enforced that the carrying out of the work be entrusted to the architect placed first, subject to the conditions in force in the country promoting the competition.

The amount of the prize shall not be deducted from the amount of the fees payable.

In the event of the person or corporation promoting the competition wishing to reserve the right to pass over the architect placed first, the conditions of competition must state the terms of compensation.

Should the work not be executed, the same compensation shall be due.

In all cases the authors of designs submitted retain all artistic right in their design, and in the building erected from it.

12. In single-stage competitions all the designs shall be exhibited in a suitable place and for a sufficient time to enable all competitors to visit the exhibition, which should be advertised beforehand in the professional papers.

In double competitions there shall be no exhibition after the first award. All the drawings shall be placed under seal, and exhibited subsequently together with the designs in the final competition.

The full report of the jury giving their reasons for the award shall be published before the opening of the exhibition for the information of all parties interested.

The above resolutions were read at the closing meeting of the Vienna Congress, and approved of generally; but at the subsequent final meeting of the permanent committee it was pointed out that, in order to render them really effective, the various nations adherent to the permanent committee should be given an opportunity of considering and confirming them. To this end a copy of the resolutions was sent to each section of the permanent committee, with a request to consider them in detail, and return them to the Secretary-General, with their observations thereon, and to appoint one member of their section to meet the other delegates at Paris with full powers to discuss the said resolutions, and settle a final and definite report, which shall be held to express the views of every nation represented on the Permanent Committee.

The meeting of the delegates takes place during the second week of November next. The observations of the sections have to reach the Secretary-General at least three weeks before that date, to enable him to prepare the necessary classification and comparative report.

Architects in the home district desiring to offer suggestions are requested to communicate them to the Competitions Committee of the Institute, and members of the allied societies to their own councils. Clear indication should be given as to the resolutions to which suggestions relate.

Registration of Architects in South Africa.

Support from the Mayor of Johannesburg.

Speaking at a meeting of the Transvaal Institute of Architects, held at the Transvaal University College on August 22nd last, the Mayor (Mr. James Thompson) said:—it was a privilege which he valued highly to take the chair at that meeting of the Transvaal Institute of Architects, and he felt that the thanks of the community were due to the members of the architectural profession in having added to the charms of their town and suburbs in the designing of so many beautiful buildings for which Johannesburg was becoming notable. The profession which they followed so ably, and represented so well in that town, had by the co-operation and direction of its members done much to raise the level of the calling in their portion of South Africa, and to his mind had rendered possible the training of future architects in South Africa itself—a step in the right direction. As a representative of the building trade he could not but remember that it was only through the loyal co-operation of the builder with the architect that good results could be achieved, and the aim of an Institute such as theirs, to properly and impartially regulate the relationships between the architect, the builder and the client, was deserving of every support. If public bodies and the public generally, having large sums of money to control on the erection of buildings, would show more confidence in the architectural profession, and dependence upon professional knowledge and integrity, it would be better for all parties concerned. The "jerry builder" in the Old Country had become a term of reproach, and no one knew better than members of their profession that the same individual was making rapid strides in South Africa; owing principally to the great competition that now existed in all branches of commercial life, and none more so than in the building trade. He was pleased last week to notice that the Government had set a good example in this connection when they refused to accept in some instances the lowest tender submitted for Government constructional work; acting, no doubt, under the advice of professional gentlemen who knew that it would have been impossible for good work to be carried out at the prices submitted. Good repute and sound business principles were recognized in all branches of commercial life; but scarcely always so in the branches with which they were closely connected. The time was fast approaching when good work faithfully carried out would be appreciated, not only by their profession, but by the Government, the Municipalities, the mining companies, and the public generally. They had all passed through trying times during the last few years, but he still believed that that young country would require and would support everything of the best. He understood that it was the endeavour of the Institute to promote through Parliament a

measure which would regulate the registration of members of the architectural profession, and with that endeavour he was in hearty support, for not only would such an Act of Parliament have a beneficial effect upon the calling to which he belonged but it would at the same time give an official recognition to the status of the capable architect as against the incapable, and would, more important still, safeguard the interests of the public commercially, structurally and artistically. He hoped that the stagnation in construction enterprise through which they had passed for some time would soon disappear, and that a return of better conditions would not long be delayed.

In proposing a vote of thanks to the Mayor, Mr. Walter Reid, President of the Institute, remarked that the ordinary individual could not be expected to discriminate between qualified and unqualified architects, and expressed the hope that the Institute would have the support of the Legislature in their endeavours to get Parliament to pass a Bill for the registration of architects.

Nominations for Officers and Council, 1908-9.

The following are the Members Nominated up to the time of going to press. October 1st is the latest date for receiving further Nominations, and the Ballot Papers will then be issued :—

President ..	Bond. Geo. E., J.P.	Rochester.
Vice-President ..	Tubbs. Percy, B., F.R.I.B.A. ..	London.
,, ..	James. Cholton, F.R.I.B.A. ..	Cardiff.
Hon. Secretary ..	Marsland. Ellis	London.
Hon. Treasurer ..	Tucker. B. R.	,,
Hon. Librarian ..	Mead. C. H., M. R. San. Inst. ..	,,
Councillor ..	Adams. Henry, M. Inst. C.E. ..	,,
,, ..	Bare. R. Geo.	,,
,, ..	Bartlett. James	,,
,, ..	Butler. R. M., F.R.I.B.A. ..	Dublin.
,, ..	Corby. J. B., F.S.I.	Stamford.
,, ..	Davies. R. Cecil	Chester.
,, ..	Emerson. H. V. Milnes, A.R.I.B.A.	London.
,, ..	Hawker. H. E., F.S.I.	Bournemouth.
,, ..	Leest. E. M., J.P.	Devonport.
,, ..	Leslie. Col. F. S., R.E.	Woolwich.
,, ..	Matthews. H. W.	Bath.
,, ..	Monson. E. C. P., F.R.I.B.A. ..	London.
,, ..	Mullins. A. E.	,,
,, ..	Murgatroyd. A. J.	Manchester.
,, ..	Partridge. E. J., F.S.I.	Richmond.
,, ..	Sadgrove. E. J., F.R.I.B.A. ..	London.
,, ..	Trew. J. Fletcher	Gloucester.

The New Architecture of London.

The Times of September 9th last, in a leading article, calls attention to the effort now being made in London to produce a new kind of street architecture both practically and æsthetically suitable to its conditions. Thirty years ago there was scarcely a sign of it. Buildings then, though free for the most part from the troubled and fantastic ugliness of the worst examples of the new movement, were either complacently mean and dull or else mere imitations of good models. Our best architecture then owed what virtue it possessed to the fact that it was dead, and the greatest praise that could be given to an architect was to call him scholarly. The ambition to be scholarly came in with Renaissance architecture, and, after the reaction from Baroque extravagance, became the chief ambition of Renaissance architects in all countries. Nor did the Gothic revival in England lessen it. The scholarly architects only changed their masters and mistook this change for originality. But mediaeval church architecture was so obviously unsuited, bo inth form and in spirit, to modern shops and clubs and hotels and Government offices, that the Gothic revival never made much way in the streets of London.

The True Problem of Architecture.

The true problem of architecture is to express the uses of a building in terms of beauty; and an original architecture is likely to arise only when the architect cannot get away from this problem, when use dictates his design and his employers will not be content with it unless he makes it beautiful. Now in a great many of our modern town buildings the design is dictated by use. The architect of shops and flats and hotels must make them fit for their purpose. His employers will not subordinate their convenience to his abstract ideas of style. Therefore one of the conditions of originality already exists for him. But that condition by itself will produce nothing but mere ugliness, there must also be the desire for beauty in the public.

This desire may have very unfortunate results, but the ugliness produced by it is different in character from that produced by mere indifference, and incomparably more hopeful. The profusion of ornament on new buildings, experiments in style, and new material, are all signs that the great mass of men are no longer content with the bald ugliness or scholarly dulness of the past. The desire for beauty is a natural instinct, and the revival of the arts, and particularly of architecture, the mother of them all, cannot come about through the good taste of a few connoisseurs, there must be a popular instinctive desire for it. We must not compare its first fruits with any of the great popular art of the past, nor with the first efforts of primitive art; for they were preserved from extravagance by the artists' want of skill, by their lack of mechanical power, and by the absence of bad models.

Architecture in a State of Anarchy.

We have enormous mechanical power, considerable technical skill, bad models everywhere, and very difficult conditions to deal with. The result is that our architecture is in a state of anarchy. Old principles will not apply and new ones have not been established; but this very anarchy promises more than the mechanical uniformity that would certainly exist if there were no popular desire for beauty.

There is a powerful revolt against the standardizing of buildings which can only be the result of a new desire for beauty, which, if it persists, is sure to produce some new kind of beauty.

It is natural that we should be taken unawares, astonished, and even shocked, by the first uncouth products of this new desire. The arts have so long lingered under the protection of connoisseurs, that we have not even asked ourselves what would be likely to happen if they escaped from that protection. Now architecture has escaped and is running wild. These follies are inevitable; but no one need despair of the issue.

The Outlook for the Future.

It is a common fault of connoisseurs to despond over the present state of the arts, and often they infect artists with their own despondency. But, luckily, there are many signs that our best architects are not despondent or scandalized. Their work also is inspired by the new desire; they do not stand aloof from it in mere scholarly pedantry, but do their best to control and enlighten it. Besides all the anarchical buildings of the new London, many are arising which show an attempt to adapt the great principles of the art to the conditions imposed upon them. How difficult that attempt is, how much hampered by materials, by building regulations, by commercial necessities, and by the bad taste of employers, only the architects themselves can know. But they also know that an original architecture can arise only through grappling with all these difficulties, and not through abstract designing that ignores them. Knowing that, and acting upon their knowledge, they have already produced many buildings of considerable actual beauty, and of still more promise for the future of the art.

Year Book, 1908-9.

The list of members is under revision for publication in the new issue of the *Year Book*. It is asked that changes of address, or other revisions, may be notified at an early date.

Cleaning Brick Buildings.

Acid or Soap.

Writing in *The Builders' Journal*, Mr. A. B. Searle says that a very popular means of cleaning brick buildings in this country is by the use of hydrochloric acid, and provided the acid is not too strong this method may be quite satisfactory. For many purposes, acetic acid is more satisfactory than hydrochloric acid, as it is equally effective in its action on the dirt, without having so corrosive an effect on the bricks. It is more expensive, but owing to its non-corrosive action buildings on which it is used remain clean longer than when the stronger "spirits of salt" is employed.

The amount of acid and water mixture required will vary somewhat with the care and skill with which it is applied, but will average about 4 square yards per gallon of mixture, with ordinary care, and costing for acid about a farthing a square yard, with acetic acid, and half to one-third of this amount for common hydrochloric acid.

When acid is used to clean the face of a building, the latter should first be washed over with clean water to remove all the dirt which can be taken off by this means, The surface is next treated with the weak acid—a hard brush, but not one of metal. being used—and finally the building is washed over with clean water, to remove any material which has been loosened, but not actually removed by the acid. This final washing may, if desired, be carried out by means of a powerful jet of water, care being taken to work from the top of the building downwards, so as to prevent all accumulation of unsightly spots caused by the "creeping" of the dirt, which always occurs when the building is played on irregularly with a hose.

Soft soap has been tried with much success, especially when it has been dissolved in 36 to 40 times its weight of warm water (1 lb. of soap in 4 gallons of water) and used whilst still warm. Apparently the most efficient cleaning is obtained by treating the building with clean water, then with the soap solution applied with a hard brush, and finally washing down with water just as was recommended above when acid is used.

Soap has little or no action on clean brickwork or stone, and its effect on soot and similar matters of a greasy nature is far more intense than that of any acid, so that when it is used, buildings of either red or buff bricks rapidly regain their original colour, unless the cleaning process has been so long delayed that nothing can ever remove the dirt from the bricks. Care must be taken to wash off thoroughly all the soap by means of a thorough playing with a hose or by the more expensive washing over with clean water, or discoloration will be produced. In actual cost, the use of soft soap in the manner described works out at practically the same as for acid.

In buildings where the dirt is more of a dusty than a sooty character, it will not usually be necessary to employ any special cleansing material, as a powerful spray of water—such as that from a fire-engine—will usually clean the building sufficiently, providing that the surface of the bricks is reasonably close and dense.

In cleaning terra-cotta work, special care must be taken that the surface is not destroyed, as much of the modern terra-cotta has a finished or dense face but an open or porous body, and if once the face is removed it will be almost impossible to keep the building clean.

For buildings which are disfigured by a whitish encrustation, technically known as efflorescence or "scum," the use of very weak hydrochloric acid is almost essential, though even this does not always prove a complete remedy. The causes of "scum" are so numerous and complicated that it is difficult to provide any single means of removing this unsightly material.

Scum is chiefly caused by soluble salts in the bricks, which are dissolved when the latter become wet with rain, and as the water dries out it carries the salts to the surface of the bricks and there deposits them. If the scum were only thicker, it would be best to remove it by scraping the walls gently, taking care not to scratch the bricks, but this is not usually practicable, and the least harmful method is to brush the defective surface with a moderately hard dry brush, when the bricks are thoroughly dry. Should this not prove effectual after several times, the surface may be washed over with a little weak acid, and then with water, the disadvantage of this latter method being that it may cause the formation of a larger proportion of soluble salts (through the action of the acid on some of the constituents of the brick), and the remedy may thus prove to be worse than the disease. The same, in a lesser degree, is true of repeated scrubbing of the wall with a wet brush and water.

The greater part of the scum which disfigures so many buildings is really due to faulty material or to the use of impure water in manufacture, and only in very few instances is it due to the absorption of soluble salts from careless storage of the finished bricks.

Builders' Ironwork.

Messrs. Parnall & Son, the well-known Architectural Ironfounders of London and Bristol, have forwarded a New Catalogue of their Ironwork Department which covers a very wide range, from altar rails to weighing machines. Their resources are not limited to the articles or designs scheduled, but they lay themselves out to provide anything required in decorative ironwork.

Chimney "Throwing."

Mr. W. Larkins, well known as a "Steeple Jack," who carried out the difficult and dangerous work of the repair of the Nelson Statue and Column in Trafalgar Square, describes in *The Builder* of September 12th, his recently adopted method of "throwing" large chimneys, and regulating the direction of their fall, by means of a carefully measured cut into one side of the base of the chimney. Mr. Larkin says:—

"The height ascertained, the pitch marked out with ropes, the centre of the shaft is taken facing the space where the fall is desired. The circumference is next taken; then, from the centre, the half of the diameter is taken each way; this gives the exact half of the chimney facing the place of fall. Then marks are made exactly at each foot on each side of the centre line, until the half-way mark is reached. Then, commencing at centre-mark, each foot-mark is numbered, the number corresponding on each side of the centre-mark until the half-way mark is reached. This ensures the cut being made accurately; as soon as the man on one side reaches, say, No. 4, he calls out to the man on the other side, to enable both to keep together. If the cut was, say, 6 in. out, it would mean the throw to be several feet out. If there is a good stretch of ground for the shaft to fall, a deep cut will throw the shaft like a tree, in fact, until nearly reaching earth. This causes the bricks to 'stretch' out half the length of shaft over its height; but if space is limited a thinner cut is made, which causes the opening to meet quicker, thus breaking the shaft up in its fall, and dropping it in half its own height.

"When the half-way mark comes over a flue the arch must be propped up, or the tremendous weight of the shaft, coming on the arch, as it commences to heel, will cause the arch to collapse, thus changing the line of fall, and causing a disaster if houses or workshops are in the way.

"A strict rule to follow is never to pass in front of the opening, and keep a sharp look-out for signs of collapse; the first sign is the opening of a joint of the brickwork opposite the upper edge of the cut. A long disused shaft, or a rotten one, collapses when only one-third is cut; a well-built or dry shaft often does not fall even when cut to the half-way mark.

"This method is the cheapest. The old method, to prop with timber and burn away, takes a great deal of labour, apart from timber props, inflammable material (oil, several casks of paraffin, etc.); also risk of fire to surrounding property. This cutting method costs only a trifle; although I must say I am the only steeple jack who adopts it—it being considered risky; but I accept all liability as to damage to property, etc.

"The highest chimney I have 'thrown' in this way was Par Stack, Cornwall, last autumn. This was 300 feet high, and weighed over 3,000 tons; moreover, the shaft was 'tackled' by several other steeple jacks to demolish piecemeal, but they

left the work after six weeks, during which time they made little impression on the chimney, so I obtained the contract to 'throw,' which was an entire success.

"The two shafts which I 'threw' two or three weeks since occupied three and a half hours, at a much lower tender for the cost of the operation than any other submitted."

The new Selfridge Building in Oxford Street.

By permission of the owner, Mr. Selfridge, and the architect, Mr. R. Frank Atkinson, F.R.I.B.A., members of the Society were recently able to see the work now nearing completion in Oxford Street.

A large party assembled at the works on September 12th, where they were met by the architect, and under his direction proceeded to view the outside of the building from various points. Re-entering the building the visitors proceeded to the basement and from thence made their way from floor to floor, finishing with an examination of the working drawings and details displayed for their inspection on the first floor.

Here the visitors found tea awaiting them by the kind hospitality of Mr. Selfridge, who presently arrived and extended a hearty welcome to the party. Mr. Selfridge intimated that this was the first official visit made to the building and said that he would welcome suggestions on points of details in its completion, not only from architects but also from their wives, their sisters, their cousins or their aunts, being very anxious to make the building as complete as possible and best adapted for its purpose. As a business man it was his desire to profit by the co-operation of others, and he hoped that when the building was in a more advanced state, that anyone who had ideas on the subject would put them forward for consideration.

Professor Henry Adams expressed the thanks of the Society to the owner, Mr. Selfridge, and the architect, Mr. Frank Atkinson, for their courtesy in throwing open the building for inspection and for the very welcome hospitality they had received.

Mr. James Bartlett speaking in support, referred to the many difficulties which the architect must have had to contend with, constructionally and otherwise. He was sure they would be glad to be allowed to revisit the building later on.

Mr. Frank Atkinson, F.R.I.B.A., having expressed the pleasure which it had given him to be of any service, a very pleasant and instructive visit was brought to a close.

Mainly about Members.

Additions are being made to Chelmsford Infirmary from the designs of Messrs. Young & Hall and Mr. Pertwee, who is joint architect.

In the recent open competition for a Parish Hall at Oakfield, Ryde, to cost about £1,000, the designs submitted by Mr. George Boughton, of Ryde, were selected.

The tower of Overton Church, Hants, is being rebuilt from the designs of Messrs. Cancellor & Hill, architects, of Winchester. The work is being carried out by Mr. Kersley, a local builder.

Mr. Walter Emden, the present Mayor of Dover, and Past-President of The Society of Architects has acceded to a unanimous request to accept the Mayoralty for another year. Mr. Emden is an ex-mayor of Westminster.

New council schools are in course of erection for the Durham County Education Committee at the mining village of Grange Villa, near Birtley. The architect is Mr. Stephen Piper, of Newcastle, whose plans were selected in competition.

The Memorial Stones of a new Wesleyan Chapel at Stockton Brook were recently laid. The Chapel will contain seating accommodation for 155 persons, and the cost is estimated at £800. Mr. Wm. Campbell is the architect of the building.

New girls' and infants' schools have been built in High Street, Barry. The schools have been carried out according to designs and under the supervision of Mr. G. A. Birkenhead, Architect of the Barry Education Committee, at a cost of about £6,700.

Extensions, which include a new home for nurses, have been opened in connection with the City Hospital for Infectious Diseases at Walker Gate, Newcastle. The cost of the home and extensions is estimated at £49,600, which includes the furnishing. The architect was Mr. Holford.

The Foundation Stones were recently laid at Hayes of the new Salem Baptist Chapel. The building will accommodate between 250 and 300 persons. The walls will be rough-cast, and the tiles for the whole of the building are dark Broseley. The architect is Mr. A. H. Winterburn.

The opening has just taken place of a new home for boys at Mablethorpe, in connection with the Leicester Poor Children's Summer Camp. The building contains a dormitory with thirty-eight beds, and attendants' rooms with two beds in each, making a total of forty-two. Mr. A. H. Hallam designed the building.

New schools have been built at Farnborough, Kent, for the Kent Education Committee. They are of brick with Portland stone dressings, supplied by the Ham Hill and Doulting Stone Company, Ltd., from their own quarries. The architect was Mr. W. H. Robinson, architect to the Kent Education Committee.

A new Baptist Church is to be erected at Pendleton, Salford, at a cost of £4,000. Accommodation will be provided for 450 persons. A feature of the building will be a couple of robing rooms behind the chancel, which can be thrown open into one for use as a lecture hall. MESSRS. COOK & SON, Manchester, are the architects.

MR. A. G. HOWARD, of Cape Town, after thirty-two years' service in the P.W.D., is commencing independent practice and proposes to devote himself principally to domestic and school work, in which latter branch he is an expert. The Government has included Mr. Howard's department amongst those to be abolished under its retrenchment scheme.

The Department of Architecture at the University of Sheffield has been founded at the desire of the Sheffield Society of Architects and Surveyors, and provides a systematic course of training for students wishing to become architects, and an advanced and continuous course of study for students during their pupilage, and also when they become qualified assistants. MR. W. S. PURCHON is the lecturer, assisted by leading Sheffield architects.

A new Wesleyan Chapel has been opened at Bishopsteignton. The new building has walls of hard reddish-brown local stone, set in random courses, and relieved with dressings of cream-coloured bricks and Bath stone. The roof is covered with patent interlocking Bridgwater tiles. The main timbers are visible, and relieved with open cusped panelling and moulded ribs. The seating is in pitch-pine. MESSRS. JOHN WILLS & SONS, Derby and London, were the architects.

The committee appointed to supervise the work of church extension in Wrexham have appointed Messrs. Protheroe, PHILLOTT, and BARNARD, architects, Cheltenham, to be the architects for the scheme. This firm undertook the recently-completed rehanging of the tower bells and the reparation of the tower of the parish church. It is hoped that the work will be commenced soon, the first step probably being the erection of a church-house in the grounds of St. Mark's Church at a cost of £3,000.

MESSRS. RAKE & COGSWELL, architects, have been instructed by the Portsmouth Board of Guardians to make pencil designs for (*a*) a ten-roomed house with the usual kitchen and offices to be built by contract for the resident medical superintendent ; (*b*) an eight-roomed house, with bath-room, for the two resident assistant medical officers and for two servants ; (*c*) for the extension of the nurses' home to the extent of thirty rooms for the accommodation of the additional nursing staff.

At the meeting of the International Fire Service Council, held last month at Luxemburg, MR. ELLIS MARSLAND (honorary secretary of The Society of Architects) was elected a deputy honorary secretary. The meeting was attended by delegates representing over 2,500,000 firemen of different countries. It was mainly occupied with administrative matters and with the revision of the statutes which will now allow the council financially to assist in the organization of fire congresses in countries where they may be beneficial.

A new Home has been opened for the nurses and house staff of the Chesterfield and North Derbyshire Hospital. This Home is part of an extension scheme which is to cost £16,000, and the removal of the nurses to their new home will result in an addition of forty surgical beds, making the total of medical and surgical beds in the Institution 120. The new building, which has cost about £10,000, has accommodation for fifty-five nurses. Mr. W. Cecil Jackson, architect, of Chesterfield, prepared the designs and superintended the work.

Building premises occupied by a firm of tailors in Newcastle-on-Tyne, and originally built by Grainger, have just been reconstructed, excepting the outer walls. Messrs. Waygood, of London, have erected a new electric elevator. A new mahogany staircase of modern design has also been fitted, and there are new glass-cased mahogany counters throughout the establishment. The workrooms and offices are situated on the third and fourth floors, the first floor being devoted entirely to showrooms. Mr. J. W. Dyson, of Blackett Street, Newcastle, was the architect.

A new Boys' School has been erected at Pontycymmer, in the Garw Valley, at a cost of £4,576. The school consists of six classrooms, grouped round three sides of a central hall, together with teachers' room, caretaker's room, store, etc. The basement is utilised as covered playgrounds. The building has been erected from designs prepared by Mr. D. Pugh-Jones, f.s.i., the County Architect (Eastern Division), Cardiff, who is also the architect for the new school at Glanynant, Pengam, for the Glamorgan County Council. The new school is designed to accommodate 200 scholars, and consists of four classrooms grouped round part of the central hall, with the necessary cloak-rooms, teachers' and caretaker's rooms and store. The cost was £2,652.

Stalling Busk Church, five miles from Askrigg (though in that parish),is being very largely built with the local limestone of the place in coursed random rubble, while the dressings to windows, doors, arches, and copings are executed at Hawes, from a very similar but more carefully selected stone. The steep roofs are to be covered with a rich red tile (laid on battens over felt and boarding), in order to make a welcome spot of colour in the rather sombre village. The boarding-rafters, purlins, and principals of the roof all show inside, and are to be Stockholm-tarred. The maximum accommodation is for 90 persons, and the normal 75. To the contract of £675 has to be added much local assistance and free cartage supplied by the farmers. The architect is Mr. T. Gerard Davidson, Great Russell Street, W.C.

It is proposed to erect a new hotel on the site at present occupied by the Turkish baths at the junction of Oriel Road and Rodney Road, Cheltenham, and to rebuild the baths in Rodney Road, adjoining the hotel. The general accommodation of the hotel consists, on the ground floor, of large entrance-hall and lounge, large

dining-room, two private dining-rooms, drawing-room, billiard-room, private sitting-rooms, manager's room, etc., with the kitchen and service department on the north-east side. On the first, second and third floors are several self-contained suites of rooms, in addition to the ordinary visitors' bedrooms, and ample bathroom and lavatory accommodation, the total bedroom accommodation being for about forty-five to fifty visitors. Messrs. Healing & Overbury, of Cheltenham, are the architects.

A new police-station has been erected at Walker by the Newcastle Corporation. The main front is in stone up to the second floor level, and above this and all the other elevations are in red-pressed brick with stone dressings. The roofs are slated with Newfoundland green slates. The floors and ceilings are of Portland cement concrete, reinforced where necessary with expanded metal. The walls are in a salt-glazed brick 5 ft. high, the remainder being in a white-glazed brick. The entrance-halls and lavatories on the ground floor are tiled, and the remainder of this floor cement and wood block. The remaining floors are of redwood joists and flooring board. The lavatories and drying-room are of coloured cement. The lighting is by electricity. The cost of the building amounts to £9,000. The work has been carried out under the direction and superintendence of the architect, Mr. F. H. Holford, Property Surveyor to the Newcastle Corporation.

New County Offices are now in course of erection at Ruthin by the Denbighshire County Council, from the designs of their county architect, Mr. Walter D. Wiles. The building comprises, in the basement, storage rooms, heating chamber, etc. On the ground floor is an octagon vestibule, 16 ft. in diameter, with the main staircase beyond, both panelled and fitted up in Austrian oak, and having polished granite columns. The offices of the Deputy Clerk of the Peace, and the Organizer of Education are on this floor, and also those for the Weights and Measures. On the first floor are the rooms for the use of the Clerk of the Peace and Education staff. Four strong-rooms for the various departments, and a caretaker's residence, are provided. In the construction, local lime-stone facings with dressings of Runcorn stone have been adopted. The main entrance is flanked on each side with polished emerald pearl granite columns, 22 ft. high. The steps are of Idle stone, and the roofs covered with green slates.

Donations to the Library.

The Hon. Librarian acknowledges with thanks the receipt of the following books.

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Students' Guide to London Libraries (*R. A. Rye*) ..	The Author.

Annual General Meeting.

The Twenty-fourth Annual General Meeting of The Society of Architects will be held at Staple Inn Buildings (South), Holborn, W.C., on Thursday, October 15th, 1908, at 8 p.m.

Agenda :—

1. The President to take the chair.
2. Minutes of the last Annual General Meeting.
3. Nominations for Membership.
4. Ballot for the following candidates.

For Honorary Membership :—

Atherley-Jones. L. A., K.C., M.P.,	Kimberscote, Bray, Berkshire.

For Membership :—

Boddy. Percy Charles,	80, Beverstone Rd., Thornton Heath, Surrey.
Campbell. William Garrett,	Johannesburg and Boksburg, Transvaal.
Corby. Percy Edmund,	15, All Saints Place, Stamford, Lincolnshire.
Dicks. Harold Edward,	Semington Cleeve Hill, Cheltenham.
Farrow. John Wilford Hilbert,	King-Williamstown, Cape Colony.
Gibb. John,	Johannesburg and Boksburg, Transvaal.
Haugham. Charles Frederick Vernon,	P.W. Department, Cape Town.
Pearson. Lawrence Lewis,	142, Norwood Road, West Norwood, S.E.
Rogers. Fergus Carstairs,	Kimberley, South Africa.
Simmons. Alfred,	Glenmore, 41, Allen Road, Wolverhampton.
Wilkins. Victor,	24, Finsbury Square, E.C.

For Studentship :—

Smith. Albert George,	10, Worcester Place, Oxford.
Stephens. Robert,	New Chief Court Buildings, Rangoon.
Waller. Arthur,	879, Bolton Road, Bradford.

5. Council's Annual Report.
6. Election of Officers and Council, 1908-9.
7. Votes of thanks.

Index and Binding Cases.

The Index is sent with this Issue, and Binding Cases may be obtained of the Secretary, price Three Shillings each.

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NOVEMBER, 1907.

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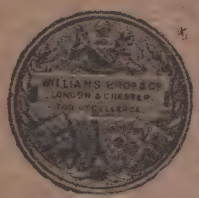

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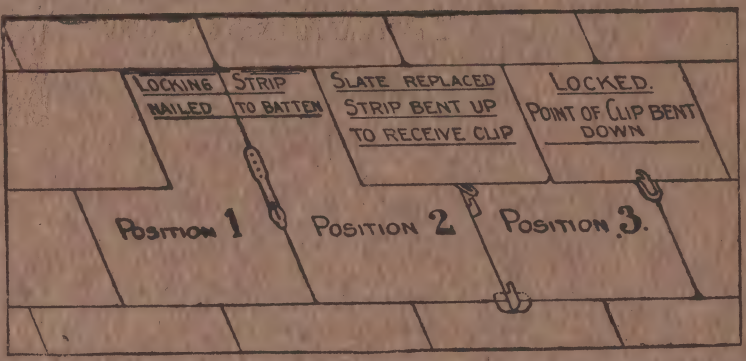

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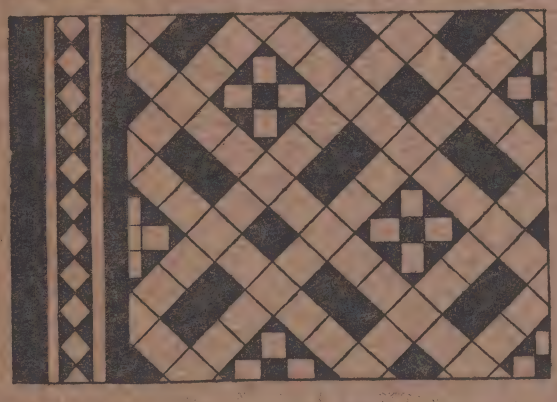

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Council's Annual Report.

Election of Officers and Council, 1908-9 and other business. See page 480.

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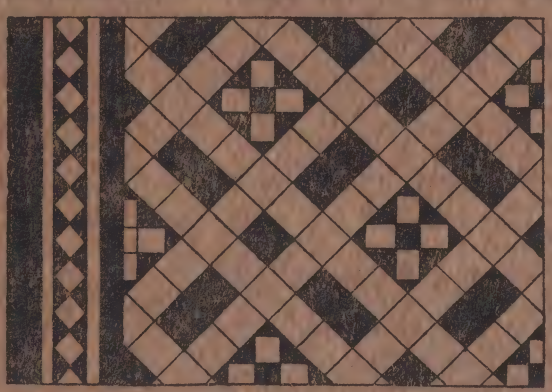

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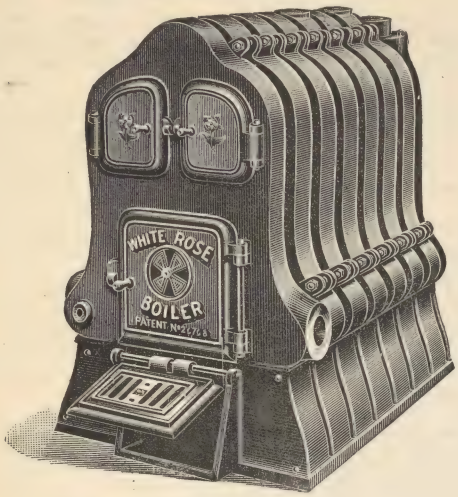

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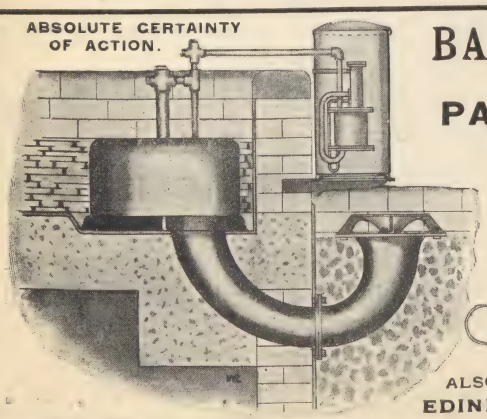

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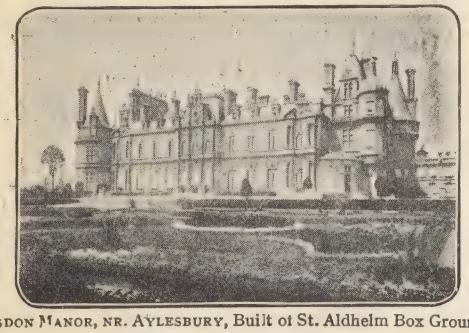

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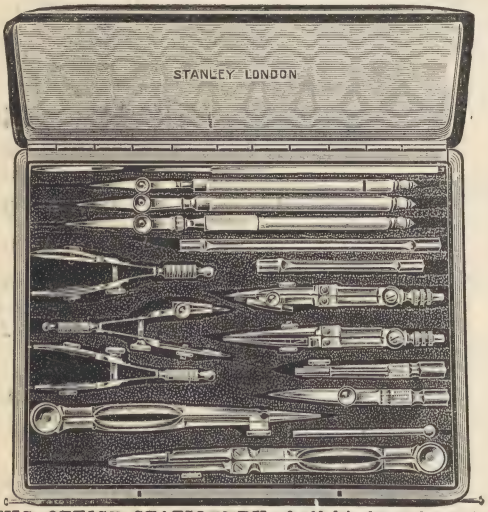

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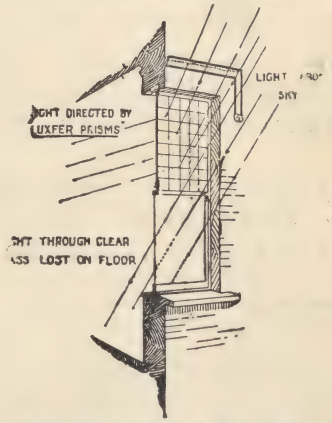

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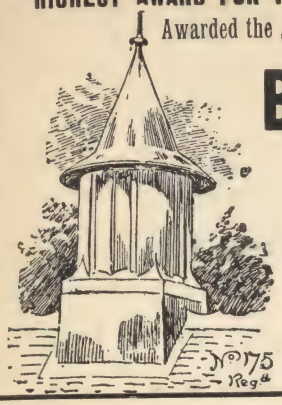

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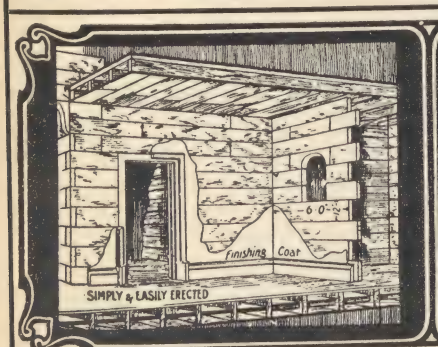

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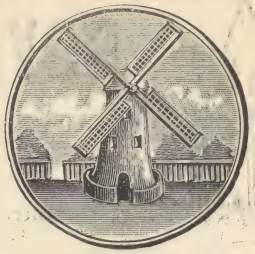

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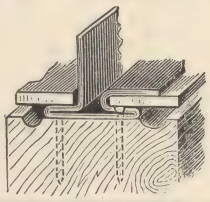

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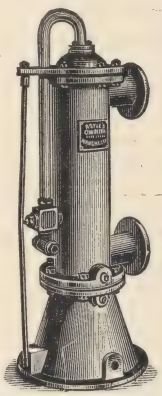

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